Fact Sheet

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**The United States Environmental Protection Agency (EPA)
Proposed Reissuance of a National Pollutant Discharge Elimination System (NPDES)
Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA)**

City of Parma
Wastewater Treatment Plant
NPDES Permit No. ID0021776

EPA Proposes To Reissue NPDES Permit
EPA proposes to **reissue** the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

State Certification
EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify the NPDES permit for this facility, under Section 401 of the Clean Water Act. A copy of the draft certification of the draft permit is provided in Appendix H. Comments regarding the certification should be directed to:

Regional Administrator
Idaho Department of Environmental Quality
1445 North Orchard St.
Boise, Idaho 83706
(208) 373-0550

Public Comment
Persons wishing to comment on, or request a Public Hearing for, the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires and all comments have been considered, EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final and the permit will become effective upon issuance. If substantive comments are received, EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19.

Documents are Available for Review
The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permit, fact sheet and other information can also be found by visiting the Region 10 NPDES website at "http://epa.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OWW-130
Seattle, Washington 98101
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permit are also available at:

EPA Idaho Operations Office
1435 North Orchard Street
Boise, Idaho 83706
(208) 378-5746

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Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30 day, 10 year low flow
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BA	Biological Assessment
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BE	Biological Evaluation
BO or BiOp	Biological Opinion
BOD_5	Biochemical oxygen demand, five-day
BOD_u	Biochemical oxygen demand, ultimate
BMP	Best Management Practices
BPT	Best Practicable Control Technology Currently Available
°C	Degrees Celsius
CBOD	Carbonaceous Biochemical Oxygen Demand
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat

EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FDF	Fundamentally Different Factor
FR	Federal Register
Gpd	Gallons per day
HUC	Hydrologic Unit Code
IC	Inhibition Concentration
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lb/day	Pounds per day
LC	Lethal Concentration
LC_{50}	Concentration at which 50% of test organisms die in a specified time period
LD_{50}	Dose at which 50% of test organisms die in a specified time period
LOEC	Lowest Observed Effect Concentration
LTA	Long Term Average
LTCP	Long Term Control Plan
mg/L	Milligrams per liter
ml	Milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observable Effect Concentration
NOI	Notice of Intent

NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TP	Total Phosphorus
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
TU_a	Toxic Units, Acute
TU_c	Toxic Units, Chronic
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit

WQS	Water Quality Standard
WWTP	Wastewater treatment plant

I. Applicant

A. General Information

This fact sheet provides information on the draft NPDES permit for the following entity:

City of Parma
NPDES Permit # ID0021776

Physical Address:
1234 Happy Road
Parma, ID 83660

Mailing Address:
P.O. Box 608
Parma, ID 83660

Contact:
Ken Steinhaus
(208) 722-5138

B. Permit History

The existing NPDES permit for the City of Parma was issued on February 27, 2004, became effective on May 1, 2004 and expired on April 30, 2009. An NPDES application for permit issuance was submitted by the permittee on October 27, 2008. EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively continued and remains fully effective and enforceable.

II. Facility Information

A. Treatment Plant Description

The City of Parma owns, operates and maintains the City of Parma Wastewater Treatment Plant (Parma WWTP) located in Parma, Idaho. The secondary treatment plant discharges treated municipal wastewater to Sand Hollow Creek, which discharges to the Snake River 4.9 miles downstream in the Lower Boise watershed.

The facility primarily treats residential and commercial wastewater with an average daily flow rate of 0.13 mgd and is designed to discharge up to 0.68 mgd. The collection system has no combined sewers, serves a resident population of approximately 2,000 and has a continuous discharge. The facility provides secondary treatment through a wastewater stabilization pond, and chlorination is used for disinfection.

A detailed description of the wastewater treatment process, as well as a map showing the location of the treatment facility and discharge, are included as Appendices A and B, respectively.

B. Background Information

Effluent Characterization

The City of Parma's collection system receives raw sewage from homes and businesses, and does not include discharge from industrial users. The treatment process at the facility consists of coarse screening, a series of lagoons (two for aeration and a third for quiescent settling), followed by rapid infiltration beds and disinfection with chlorine before discharging to Sand Hollow Creek. In order to determine pollutants of concern for further analysis, EPA evaluated the application form, additional discharge data and the nature of the discharge. Pollutants typically expected in the discharge of a municipal wastewater treatment plant treating with chlorine include five-day biochemical oxygen demand ($BOD_{5)}$, total suspended solids (TSS), *E. coli* bacteria, total residual chlorine (TRC), pH, ammonia, temperature, phosphorus and dissolved oxygen (DO). Additionally, the monitoring results submitted with the application included data for Total Kjeldahl Nitrogen (TKN), nitrate-nitrite, and total dissolved solids (TDS). Based on this analysis, pollutants of concern are as follows:

- BOD_5
- TSS
- *E. coli* bacteria
- TRC
- pH
- Ammonia
- Phosphorus
- DO
- TKN
- Nitrate-Nitrite
- TDS

The concentrations of pollutants in the discharge were reported in the NPDES application and DMRs, and were used in determining reasonable potential for parameters (see Appendix D).

Facility Compliance

In 2006, EPA notified the City of Parma of noncompliance for exceeding BOD_5 and TSS effluent limits multiple times, as well as not meeting BOD_5 and TSS percent removal minimums, or *E. coli* and pH limits on a few occasions.

BOD_5 control has been improved since the facility acquired additional aerators in 2009 and the facility has improved TSS control by closely tracking the system and making adjustments as needed. There have been very few violations reported in DMRs since corrective action was taken.

EPA conducted an inspection of the wastewater treatment plant in 2008 and found deficiencies, mostly of a recordkeeping nature, that the facility has since taken action to resolve.

III. Receiving Water

The facility discharges to Sand Hollow Creek in the City of Parma, Idaho. Sand Hollow Creek is located in the northwest portion of the Lower Boise River watershed and drains to the Snake River, which is located in southwest Idaho.

A. Low Flow Conditions

The *Technical Support Document for Water Quality-Based Toxics Control* (hereafter referred to as the TSD) (EPA, 1991) and Idaho Water Quality Standards (WQS) recommend the flow conditions to use in steady-state modeling for the calculation of water quality-based effluent limits (WQBELs). The TSD and Idaho WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (7Q10) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years (1Q10) for acute criteria. The chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years; therefore, EPA generally uses the 30B3 for the chronic ammonia criterion instead of the 7Q10. The 30B3 is a biologically-based flow rate designed to ensure an excursion frequency of no more than once every three years for a 30-day average flow rate. For human health criteria, the Idaho water quality standards recommend the 30Q5 flow rate (designed to ensure an excursion frequency of no more than once every five years for a 30-day average flow rate) for non-carcinogens, and the harmonic mean flow rate for carcinogens. The 30Q5 can also be used for the calculation of ammonia reasonable potential and was used in the draft permit.

Sand Hollow Creek flow data was collected by the Idaho State Department of Agriculture at the Fort Boise Wildlife Management Area bridge during the years 1998 and 2008. These data were analyzed using an EPA Region 10 Stream Low Flow Calculator, which determines low flows based on TSD procedures. The calculated low flows for Sand Hollow Creek are estimated to be 36.96 cfs for the 1Q10, 48.04 cfs for the 7Q10 and 52.85 cfs for the 30Q5.

The limits in the existing permit were erroneously based on receiving water low flows for the Snake River. This has been corrected in this draft permit by using the low flow conditions calculated for Sand Hollow Creek as described above.

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. 40 CFR 122.4(d) requires that the conditions in NPDES permits ensure compliance with WQS of all affected states. A state's WQS are composed of use classifications, numeric and/or narrative water quality criteria and an antidegradation policy.

The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation and aquatic life. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The antidegradation policy

represents a three-tiered approach to maintain and protect various levels of water quality and uses.

The Parma WWTP discharges to Sand Hollow Creek, which then flows into the Snake River approximately 4.9 miles downstream. The midpoint of the Snake River is the state boundary between Idaho and Oregon. Therefore, both state WQS were considered when developing effluent limits.

In general, Idaho water quality criteria are protective of beneficial uses established by Oregon. In most cases for the parameters of concern, Idaho criteria are as stringent as the Oregon criteria, with the following exceptions: Oregon's water quality standard for pH is more stringent, and its designation of salmonid spawning as a beneficial use of the river requires more stringent dissolved oxygen and temperature criteria. However, for these parameters, dilution that occurs before the effluent reaches the Snake River is sufficient to ensure that the effluent will not affect attainment of the Oregon water quality standards. Therefore, Idaho WQS have been used to develop effluent limits.

Designated Beneficial Uses

This facility discharges to Sand Hollow Creek in the Lower Boise River subbasin (USGS HUC 17050114). At the point of discharge, Sand Hollow Creek is protected for the following designated uses (IDAPA 58.01.02.140.12):

- cold water aquatic life habitat
- secondary contact recreation

In addition, the Idaho WQS state that all waters of the State of Idaho are protected for industrial and agricultural water supply (Section 100.03.b and c.), wildlife habitats (100.04) and aesthetics (100.05). Sections 252.02, 252.03, and 253 of the WQS state that these uses are to be protected by narrative criteria which appear in Section 200. These narrative criteria state that all surface waters of the state shall be free from hazardous materials; toxic substances; deleterious materials; radioactive materials; floating, suspended or submerged matter; excess nutrients; oxygen-demanding materials; and sediment in concentrations which would impair beneficial uses. The WQS also state, in Section 252.02, that the criteria from Water Quality Criteria 1972, also referred to as the "Blue Book" (EPA-R3-73-033), can be used to determine numeric criteria for the protection of the agricultural water supply use.

In the existing permit, primary contact recreation was mistakenly identified as a beneficial use instead of secondary contact recreation. This is discussed further in the antidegradation, antibacksliding and basis for effluent limitations sections below.

Antidegradation

The EPA is required under Section 301(b)(1)(C) of the CWA and implementing regulations (40 CFR 122.4(d) and 122.44(d)) to establish conditions in NPDES permits that ensure compliance with State water quality standards, including antidegradation requirements.

IDEQ has provided EPA with an antidegradation analysis that complies with the State's antidegradation implementation procedures in the State's 401 certification. See Appendix H.

C. Water Quality Limited Waters

Any waterbody for which the water quality does not, and/or is not expected to meet, applicable water quality standards is defined as a "water quality limited segment." Section 303(d) of the CWA requires states to develop a Total Maximum Daily Load (TMDL) management plan for water bodies determined to be water quality limited segments. A TMDL is a detailed analysis of the water body to determine its assimilative capacity. The assimilative capacity is the loading of a pollutant that a water body can assimilate without causing or contributing to a violation of water quality standards. Once the assimilative capacity of the water body has been determined, the TMDL will allocate that capacity among point and non-point pollutant sources, taking into account natural background levels and a margin of safety. Allocations for non-point sources are known as "load allocations" (LAs). The allocations for point sources, known as "waste load allocations" (WLAs), are implemented through effluent limitations in NPDES permits. Effluent limitations for point sources must be consistent with applicable TMDL allocations.

Approximately 2.5 miles downstream from the City of Parma WWTP, Sand Hollow Creek (AU 17050114SW017_06) is listed as impaired for cause unknown (nutrients suspected). Sand Hollow Creek flows into the Hells Canyon Segment of the Snake River, which is impaired due to excess nutrients. The EPA-approved *Snake River Hells Canyon (SR-HC) TMDL* (IDEQ 2003) established load allocations for all the tributaries, including Sand Hollow Creek. The load allocations are based upon a total phosphorus (TP) concentration of 0.07 mg/L at the mouth of the tributaries. The draft permit includes a TP effluent limit based on the load allocation assigned to the tributary in the *SR-HC TMDL*.

Sand Hollow Creek (AU 17050114SW017_03) is impaired for sediment and *E. coli*. The EPA-approved *Lower Boise River TMDL: 2015 Sediment and Bacteria Addendum (LBR 2015 TMDL Addendum)* (IDEQ 2015), established WLAs for the Parma WWTP for sediment and bacteria. See Table 26, on Page 47 of the *LBR TMDL 2015 Addendum*. The draft permit proposes effluent limits for TSS and *E. coli* that are consistent with the assumptions and requirements of the WLAs from the *LBR TMDL 2015 Addendum*.

IV. Effluent Limitations

A. Basis for Effluent Limitations

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits. The basis for the effluent limits proposed in the draft permit is provided in Appendix C.

B. Proposed Effluent Limitations

Below are the proposed effluent limits that are in the draft permit.

1. ***Narrative limitations to protect Idaho's narrative criteria for floating, suspended, or submerged matter:***

   The permittee must not discharge floating, suspended, or submerged matter of any kind in concentrations or amounts causing nuisance or objectionable conditions or that may impair designated beneficial uses.

2. ***Narrative secondary treatment percent removal requirements for publicly owned treatment works (POTWs)***

   Removal requirements for five-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS): The monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration. Percent removal of BOD_5 and TSS must be reported on DMRs. For each parameter, the monthly average percent removal must be calculated from the arithmetic mean of the influent concentration values and the arithmetic mean of the effluent concentration values for that month. Influent and effluent samples must be taken over approximately the same time period.

Table 1, below, presents proposed effluent limits.

Table 1 Proposed Effluent Limits

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	—
	lb/day	170	255	—
	% removal	85% (min)	—	—
Total Suspended Solids (TSS)	mg/L	30	45	—
	mg/L	17.5 4-month rolling average		
	lb/day	170	255	—
	lb/day	99.2 4-month rolling average		
	% removal	85% (min)	—	—
***E. coli* Bacteria**[1]	#/100 ml	126	—	576 instantaneous max limit
pH[2]	s.u.	6.5-9.0		
Total Residual Chlorine (TRC) – Interim[3]	mg/L	0.5	0.75	—
	lb/day	2.84	4.25	—
Total Residual Chlorine (TRC) – Final[3]	mg/L	0.074	—	0.186
	lb/day	0.042	—	1.05
Total Phosphorus (TP), as P – Interim[4]	lb/day	6.45	—	—
Total Phosphorus (TP), as P – Final Applies May – September[4]	mg/L	0.070	0.141	—
	lb/day	0.40	0.80	—

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit

1. The average monthly *E. coli* count must not exceed a geometric mean of 126/100 mL based a minimum of five samples taken every three to seven days within a calendar month. See Part VI of the draft permit for definition of geometric mean.
2. The pH range must be maintained at all times
3. TRC final limits apply after beginning first three years after permit issuance. See section IV.D of the factsheet and II.C of the permit for additional details.
4. TP final limits apply 9 years and 11 months after the effective date of the permit. See section IV.D of the factsheet and II.C of the permit for additional details.

C. Changes in Limits from the Existing Permit

Table 2 illustrates the changes in effluent limits from the existing permit.

Table 2 Changes in Permit: Effluent Limits

Parameter	Existing Permit Limits	Draft Permit Limits
BOD	45 mg/L; 255 lb/day AML	30 mg/L; 170 lb/day AML
	65 mg/L; 369 lb/day AWL	45 mg/L; 255 mg/L AWL
TSS	45 mg/L; 255 lb/day AML	30 mg/L; 170 lb/day AML
	65 mg/L; 369 lb/day AWL	45 mg/L; 255 mg/L AWL
	No 4-month average	17.5 mg/L; 99.2 lb/day 4-month average
TP, as P	No Limits	Interim limit 6.45 lb/day AML Final Limit: 0.070 mg/L AML, 0.141 mg/L AWL
E. coli	406 instantaneous maximum	576 instantaneous maximum
TRC	0.5 mg/L AML	Interim limit: 0.5 mg/L AML Final limit: 0.074 mg/L AML
	0.75 mg/L MDL	Interim limit: 0.75 mg/L MDL Final limit: 0.186 mg/L MDL
AML = Average Monthly Limit; MDL = Maximum Daily Limit		

D. Compliance Schedule

40 CFR 122.47 allows permit writers to establish schedules of compliance to provide permittees additional time to achieve compliance with the CWA and applicable regulations. Schedules developed under this provision must require compliance by the permittee as soon as possible, and may not extend the date for final compliance beyond compliance dates established by the CWA. Examples of requirements for which a compliance schedule in an NPDES permit might be appropriate include:

- Pretreatment program development
- Sludge use and disposal program development and implementation
- BMP plan development and implementation
- Compliance with effluent limitations derived from new or revised WQS

The City of Parma will be given compliance schedules to meet new water quality-based effluent limits for TRC and TP.

Final TRC limits must be met within three years of permit issuance. The provisions of the compliance schedule are necessary since the facility has not had to comply with such a TRC limit and based on current data, the facility would not be able to meet the limit immediately. A three-year schedule was identified as the shortest possible time period in which the facility could come into compliance with the new limits given the need to complete a technical evaluation, develop an engineering plan, and complete design and construction. During the time the facility is taking the steps necessary to meet the final limit, it must maintain compliance with interim limits as specified in Table 1. The facility is already maintaining compliance with these limits, which are in the existing permit.

The City of Parma will also be given a 9-year and 11-month compliance schedule to meet new water-quality based effluent limits for TP. The provisions of the compliance schedule are necessary since the facility data show that the City is not able comply with the final TP limit immediately. The permit includes an interim limit for TP based on existing performance data.

Annual reports must be submitted documenting compliance with the interim milestones, as identified in the draft permit, as well as progress made toward compliance with the final limit.

E. Permit Modifications

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR 122.62, 122.63, 122.64, or 124.5.

F. Statutory Prohibitions on Backsliding

Section 402(o) of the CWA generally prohibits the establishment of effluent limits in a reissued NPDES permit that are less stringent than the corresponding limits in the previous permit (i.e., "backsliding") but provides limited exceptions. Section 402(o)(1) states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with state treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)).

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the state's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). According to the *U.S. EPA NPDES Permit Writers' Manual* (EPA-833-K-10-001) the 402(o)(2) exceptions are applicable to WQBELs (except for 402(o)(2)(B)(ii) and 402(o)(2)(D)) and are independent of the requirements of 303(d)(4). Therefore, WQBELs may be relaxed as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied.

Even if the requirements of Sections 303(d)(4) or 402(o)(2) are satisfied, Section 402(o)(3) prohibits backsliding that would result in violations of WQS or effluent limit guidelines.

The draft permit includes a less stringent instantaneous maximum limit for *E. coli*. Sand Hollow Creek at the point of discharge is designated for secondary contact recreation. The

existing permit incorrectly identified the designated use in Sand Hollow Creek as primary contact recreation. Because of this incorrect designation, the existing permit established an instantaneous maximum limit of 406 CFU/100 ml. In contrast, the instantaneous maximum limit for a facility that discharges to water designated for secondary contact recreation is 576 CFU/ml.

A less stringent limit for *E. coli* meets the exception to the prohibition on backsliding established under Section 303(d)(4)(a) of the CWA. The revised limit is consistent with the assumptions and requirements of the *LBR TMDL 2015 Addendum*. The WLA is based on the designated use of secondary contact recreation for Sand Hollow Creek.

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permit also requires the permittee to perform effluent monitoring required by parts B.6 and D of the NPDES Form 2A application, so that these data will be available when the permittee applies for renewal of its NPDES permit.

The permittee is responsible for conducting monitoring and for reporting results on Discharge Monitoring Reports (DMRs) or on the application for renewal, as appropriate, to the EPA.

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than required under the permit; however, these additional samples must be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR Part 136) or as specified in the permit.

Table 3, below, presents the proposed effluent monitoring requirements for the facility. Samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

The permittee must also visually inspect the effluent once a month for any conditions violating the narrative criteria in Section IV.B of the fact sheet and report the result on DMRs. The monitoring frequency for BOD and TSS is consistent with monitoring frequencies required of other POTWs in Idaho with similar design flows. The five sample per month monitoring frequency for *E. coli* is based on Idaho's water quality criterion for *E. coli* (IDAPA 58.01.02.251.01.a).

Also note that the application form for permit reissuance requires monitoring as described in Part B.6 of the application form for POTWs (EPA Form 3510-2A, revised 1-99, see also Appendix J to 40 CFR 122).

Table 3 Proposed Effluent Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	Mgd	Effluent	Continuous	Recording
BOD_5	mg/L	Influent & Effluent	1/month	Grab
	lb/day	Influent & Effluent	1/month	Calculation[1]
	% Removal	--	--	Calculation[2]
TSS	mg/L	Influent & Effluent	1/month	Grab
	lb/day	Influent & Effluent	1/month	Calculation[1]
	% Removal	--	--	Calculation[2]
***E. coli*[3,4]**	colonies/100 ml	Effluent	5/month[4]	Grab
pH	standard units	Effluent	5/week	Grab
TRC[4]	mg/L	Effluent	5/week	Grab
	lb/day	Effluent		Calculation[1]
TP as P	lb/day	Effluent	1/month	Grab
Total Ammonia as N	mg/L	Effluent	1/quarter	Grab
Dissolved Oxygen	mg/L	Effluent	1/quarter	Grab

1. Loading (in lb/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in mgd) for the day of sampling and a conversion factor of 8.34. For more information on calculating, averaging, and reporting loads and concentrations see the *NPDES Self-Monitoring System User Guide* (EPA 833-B-85-100, March 1985).
2. Percent Removal. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month using the following equation:
   (average monthly influent concentration - average monthly effluent concentration) ÷ average monthly influent concentration x 100. Influent and effluent samples must be taken over approximately the same time period.
3. Geometric Mean Criterion. Waters designated for primary or secondary contact recreation are not to contain *E. coli* bacteria in concentrations exceeding a geometric mean of one hundred twenty-six (126) *E. coli* organisms per one hundred (100) ml based on a minimum of five (5) samples taken every three (3) to seven (7) days over a thirty (30) day period. (IDAPA 58.01.02.251.01.a).
4. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Part I.B.4 of the draft permit.

Monitoring Changes from the Previous Permit

Monitoring requirements have largely been retained from the existing permit, but for certain parameters the monitoring frequency has changed and for others the sample type has changed.

Table 4, below, presents the monitoring changes from the existing permit.

A monthly monitoring requirement is retained for TP, but monitoring is no longer limited to the first year of the permit term. Ammonia and dissolved oxygen monitoring frequency will be reduced from monthly to quarterly, and will no longer be limited to the first year of the permit term. Having data for the entire duration of the permit will aid in data analysis at the time of permit reissuance.

Table 4 Changes in Permit: Effluent Monitoring

Parameter	Existing Permit	Draft Permit
TP, as P	Monthly monitoring for one year only	Monthly monitoring (not limited to one year)
Total Ammonia, as N	Monthly monitoring for one year only	Quarterly monitoring (not limited to one year)
Dissolved Oxygen	Monthly monitoring for one year only	Quarterly monitoring (not limited to one year)

C. Surface Water Monitoring

Table 5 presents the proposed surface water monitoring requirements for the draft permit. The City of Parma will be required to continue surface water monitoring at the established location. Surface water monitoring results must be submitted annually.

Table 5 Surface Water Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	Mgd	Upstream of treatment plant outfall	1/quarter	Grab
pH	standard units	Upstream of treatment plant outfall	1/quarter	Grab
Total Ammonia as N	mg/L	Upstream of treatment plant outfall	1/quarter	Grab
Dissolved Oxygen	mg/L	Upstream of treatment plant outfall	1/quarter	Grab
TP, as P	mg/L	Upstream of treatment plant outfall	1/quarter	Grab
Temperature	ºC	Upstream of treatment plant outfall	1/quarter	Grab

Monitoring Changes from the Previous Permit

Monitoring requirements have largely been retained from the existing permit, but monitoring of surface water flow was added in order to gather additional receiving water information that will help ensure the most accurate information is available at the time of permit reissuance. Table 6, below, presents monitoring changes from the existing permit.

Table 6 Changes in Permit: Surface Water Monitoring

Parameter	Existing Permit	Draft Permit
Flow	None	Quarterly as a grab sample upstream of the treatment plant outfall

D. Monitoring and Reporting

Prior to submission of the November 2016 DMR (due 21 December 2016), the permittee may elect to use NetDMR to electronically submit DMRs instead of mailing paper DMRs.

Starting with the submittal of the November 2016 DMR, the permittee must electronically report DMRs using NetDMR. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application. Under NetDMR, all reports required under the permit are submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it is no longer required to submit paper copies of DMRs or other reports to EPA or the state. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: http://www.epa.gov/netdmr.

VI. Sludge (Biosolids) Requirements

EPA Region 10 separates wastewater and sludge permitting. EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the state's biosolids program. The Part 503 regulations are self-implementing, which means that facilities must comply with them whether or not they are reflected in permit conditions.

VII. Other Permit Conditions

A. Quality Assurance Plan

In order to ensure compliance with the federal regulation at 40 CFR 122.41(e) for proper operation and maintenance, the draft permit requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The City of Parma is required to update the Quality Assurance Plan for the Parma WWTP within 180 days of the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis and data reporting. The plan shall be retained on site and made available to EPA and IDEQ upon request.

B. Operation and Maintenance Plan

The permit requires the City of Parma to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements and all other permit requirements at all times. The permittee is required to develop and implement an operation and maintenance plan for the facility within 180 days of the effective date of the final permit. The plan shall be retained on site and made available to EPA and IDEQ upon request.

C. Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System

Untreated or partially treated discharges from separate sanitary sewer systems are referred to as sanitary sewer overflows (SSOs). SSOs may present serious risks of human exposure when released to certain areas, such as streets, private property, basements and receiving waters used for drinking water, fishing and shellfishing, or contact recreation. Untreated

sewage contains pathogens and other pollutants, which are toxic. SSOs are not authorized under this permit. Pursuant to the NPDES regulations, discharges from separate sanitary sewer systems authorized by NPDES permits must meet effluent limitations that are based upon secondary treatment. Further, discharges must meet any more stringent effluent limitations that are established to meet EPA-approved state water quality standards.

The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system. The following specific permit conditions apply:

Immediate Reporting – The permittee is required to notify the EPA of an SSO within 24 hours of the time the permittee becomes aware of the overflow. (See 40 CFR 122.41(l)(6))

Written Reports – The permittee is required to provide the EPA a written report within five days of the time it became aware of any overflow that is subject to the immediate reporting provision. (See 40 CFR 122.41(l)(6)(i)).

Third Party Notice – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to a likelihood of human exposure; or unanticipated bypass and upset that exceeds any effluent limitation in the permit or that may endanger health due to a likelihood of human exposure. The permittee is required to develop, in consultation with appropriate authorities at the local, county, tribal and/or state level, a plan that describes how, under various overflow (and unanticipated bypass and upset) scenarios, the public, as well as other entities, would be notified of overflows that may endanger health. The plan should identify all overflows that would be reported and to whom, and the specific information that would be reported. The plan should include a description of lines of communication and the identities of responsible officials. (See 40 CFR 122.41(l)(6)).

Record Keeping – The permittee is required to keep records of SSOs. The permittee must retain the reports submitted to the EPA and other appropriate reports that could include work orders associated with investigation of system problems related to an SSO that describes the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO. (See 40 CFR 122.41(j)).

Proper Operation and Maintenance – The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41 (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

The permittee may refer to the *Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems* (EPA 305-B-05-002). This guide identifies some of the criteria used by EPA inspectors to evaluate a collection system's management, operation and maintenance program activities. Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance.

D. Design Criteria

The permit retains design criteria requirements from the previous permit. This provision requires the permittee to compare influent flow and loading to the facility's design flow and loading and prepare a facility plan for maintaining compliance with NPDES permit effluent limits when the annual average flow or loading exceeds 85% of the design criteria values for three consecutive months.

E. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities." The EPA strives to enhance the ability of overburdened communities to participate fully and meaningfully in the permitting process for EPA-issued permits, including NPDES permits. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. As part of an agency-wide effort, the EPA Region 10 will consider prioritizing enhanced public involvement opportunities for EPA-issued permits that may involve activities with significant public health or environmental impacts on already overburdened communities. For more information, please visit http://www.epa.gov/compliance/ej/plan-ej/ .

As part of the permit development process, the EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

The Parma WWTP is not located within or near a Census block group that is potentially overburdened. The draft permit does not include any additional conditions to address environmental justice.

Regardless of whether a facility is located near a potentially overburdened community, the EPA encourages permittees to review (and to consider adopting, where appropriate) Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities (see https://www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the-permit-application-process#p-104). Examples of promising practices include: thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, etc.

F. Industrial Waste Management Requirements

EPA implements and enforces the National Pretreatment Program regulations of 40 CFR 403, per authority from sections 204(b)(1), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(h)(5) and 301(i)(2), 304(e) and (g), 307, 308, 309, 402(b), 405, and 501(a) of the Federal Water Pollutant Control Act as amended by the CWA of 1977.

Because Idaho does not have an approved state pretreatment program per 40 CFR 403.10, EPA is the Approval Authority for Idaho POTWs. Because the City of Parma does not have an approved POTW pretreatment program per 40 CFR 403.8, the EPA is also the Control Authority of industrial users that might introduce pollutants into the Parma WWTP.

Per 40 CFR 122.44(j)(1), all POTWs need to identify, in terms of character and volume of pollutants, any significant industrial users (SIUs) discharging into the POTW. This condition is included as Special Condition D.1 of the draft permit with a due date 90 days following the effective date of the POTW permit.

Since the Parma WWTP does not have an approved pretreatment program, Special Condition D.2 of the permit reminds the City that it cannot authorize discharges which may violate the national specific prohibitions of the General Pretreatment Program, which are applicable to all industrial users introducing pollutants into a publicly owned treatment works (40 CFR 403.5(b)).

A condition in the permit requires that the Permittee to develop legal authority enforceable in Federal, State or local courts which authorizes or enables the POTW to apply and to enforce the requirement of sections 307 (b) and (c) and 402(b)(8) of the Clean Water Act, as described in 40 CFR 403.8(f)(1). The draft legal authority must be submitted to EPA for review and comment, and then shall be adopted and enforced by the POTW.

G. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because these requirements are based directly on NPDES regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

VIII. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. A review of the threatened and endangered species located in Idaho finds that there are no threatened or endangered species located in vicinity of the discharge, therefore ESA consultation is not required.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH). A review of the Essential Fish Habitat documents shows that there is no EFH in the vicinity of the discharge.

C. State Certification

Section 401 of the CWA requires EPA to seek state certification before issuing a final permit. As a result of the certification, the state may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any state law or regulation.

D. Permit Expiration

The permit will expire five years from the effective date.

IX. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

IDEQ. 2001. *Sand Hollow Creek Subbasin Assessment*. Idaho Department of Environmental Quality. Boise, I.D. http://www.deq.idaho.gov/media/781365-sand-hollow-creek-mason-creek-2001-sba.pdf.

IDEQ. 2015. *Lower Boise River TMDL: 2015 Sediment and Bacteria Addendum* (IDEQ 2015)

Appendix A: Wastewater Treatment Process Details

The City of Parma's Wastewater Treatment Facility is designed to reduce the level of contaminants in the City's wastewater to a point where it can be discharged to Sand Hollow Creek.

The treatment process involves the removal of large debris; a lagoon treatment system allowing for the growth and development of microorganisms that consume the organic material in the wastewater and break it down to water, carbon dioxide and stable compounds; and chlorination for disinfection, resulting in an effluent that can then be discharged to Sand Hollow Creek with a lower impact on the aquatic environment.

First, influent pumps bring untreated wastewater to the influent bar screen to remove large debris. Then, a series of three lagoons treats the wastewater with two lagoons used for aeration and a third lagoon for quiescent settling. Wastewater then flows to rapid infiltration beds and subsurface chlorine contact piping before being discharged to Sand Hollow Creek.

Appendix B: Facility Location and Process Maps

UNIT PROCESS FLOW

INFLUENT → AERATION LAGOONS 1-3 → RAPID INFILTRATION BEDS → CHLORINE DISINFECTION → EFFLUENT SAND HOLLOW CREEK OUTFALL

LEGEND

- ⊗ EFFLUENT WATER SAMPLING LOCATION DURING NORMAL SAND HOLLOW CREEK FLOW
- ⊠ EFFLUENT WATER SAMPLING LOCATION DURING HIGH SAND HOLLOW CREEK FLOW
- ▲ SAND HOLLOW CREEK SURFACE WATER MONITORING LOCATION NEAR INFLUENT PUMPS

HOLLADAY ENGINEERING CO.

FIGURE B.3
PROCESS FLOW DIAGRAM
WASTEWATER TREATMENT FACILITY
CITY OF PARMA, IDAHO

Appendix C: Basis for Effluent Limits

The following discussion explains in more detail the statutory and regulatory basis for the technology and water quality-based effluent limits in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general and Part C discusses facility specific water quality-based effluent limits.

A. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which all POTWs were required to meet by July 1, 1977. EPA has developed and promulgated "secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS and pH. The regulations include special considerations, referred to as "treatment equivalent to secondary," for POTWs with waste stabilization ponds (lagoons) and trickling filters.

In the previous permit, the Parma facility was required to meet requirements for treatment equivalent to secondary standards. In 2006, EPA notified the City of Parma of noncompliance for exceeding BOD_5 and TSS effluent limits multiple times. However, BOD_5 control has been improved since the facility acquired additional aerators and the facility had improved TSS control by closely tracking the system and making adjustments as needed. Effluent monitoring data since 2008 indicate that the effluent discharge has consistently met the secondary standards. In accordance with regulations at 40 CFR 133.105(f)(1), this facility has demonstrated that secondary standards are achievable, and limitations in this permit have been modified to reflect secondary treatment standards rather than requirements for treatment equivalent to secondary standards.

The federally promulgated secondary treatment effluent limits are listed in Table C-1.

Table C - 1 Secondary Treatment Effluent Limits

Parameter	Average Monthly Limit	Average Weekly Limit	Range
BOD_5	30 mg/L	45 mg/L	---
TSS	30 mg/L	45 mg/L	---
Removal Rates for BOD_5 and TSS	85% (minimum)	---	---
pH	---	---	6.0 - 9.0 s.u.

EPA has developed and promulgated regulations that include alternative standards that apply to facilities using "treatment equivalent to secondary" such as waste stabilization ponds and trickling filters, which are found in 40 CFR 133.105(a) - (c). These standards specify the maximum allowable discharge concentration of BOD_5, TSS and a minimum percent removal requirement for qualified facilities as listed below in Table C-2.

Table C - 2 Equivalent to Secondary Treatment Effluent Limits

Parameter	Average Monthly Limit	Average Weekly Limit	Range
BOD_5	Not to exceed 45 mg/L	Not to exceed 65 mg/L	---
TSS	Not to exceed 45 mg/L	Not to exceed 65 mg/L	---
Removal Rates for BOD_5 and TSS	Not less than 65%	---	---
pH	---	---	6.0 - 9.0 s.u.

Additionally, 40 CFR 133.105(f) requires more stringent limitations when analysis determines that more stringent concentrations are achievable. 40 CFR 133.101(f), defines effluent concentrations consistently achievable as the 95% value for the 30-day average. The 7-day average value is calculated by multiplying the 30-day average by 1.5.

A facility must meet all of the following criteria in order to qualify for application of those alternative standards as shown above in Table C-2:

1. Criterion #1 - "The BOD_5 and TSS effluent concentrations consistently achievable through proper operation and maintenance of the treatment works exceed the minimum level of the effluent quality for secondary treatment." 40 CFR 133.101(g)(1). 40 CFR 133.101(f) defines "effluent concentrations consistently achievable through proper operation and maintenance" as "(f)(1): For a given pollutant, the 95^{th} percentile value for the 30-day average effluent quality achieved by a treatment works in a period of at least 2 years, excluding values attributable to upsets, bypasses, operational errors, or other unusual conditions, and (f)(2): a 7-day average value equal to 1.5 times the value derived under paragraph (f)(1) of this section."
2. Criterion # 2 - "A trickling filter or waste stabilization pond is used as the principal treatment process." 40 CFR 133.101(g)(2).
3. Criterion # 3 - "The treatment works provide significant biological treatment of municipal wastewater." 40 CFR 133.101(g)(3). "Significant biological treatment" is defined in 40 C.F.R. 133.101(k) as "The use of an aerobic or anaerobic biological treatment process in a treatment works to consistently achieve a 30-day average of a [sic] least 65 percent removal of BOD_5."

All effluent monitoring data taken from recent Discharge Monitoring Reports (DMRs) for the Parma WWTP indicates that the facility meets the criteria to qualify for secondary treatment effluent limits for both BOD_5 and TSS. Table C - 3 below, shows the monthly averages of BOD_5 and TSS.

Table C - 3 Monthly Average BOD_5 and TSS Effluent DMR Values

Monitoring Period	Monthly Average BOD_5 (mg/L)	Monthly Average TSS (mg/L)
6/24/08 to 7/18/08	14	24
7/19/08 to 8/18/08	13	7
8/19/08 to 9/18/08	10	3
9/19/08 to 10 17/08	11	9

10/18/08 to 11/14-08	10	3
11/15/08 to 12/15/08	12	5
12/16/08 to 1/16/09	15	4
1/17/09 to 2/17/09	12	32
2/18/09 to 3/17/09	23	24
3/18/09 to 4/20/09	7	10
4/21/09 to 5/18/09	7	3
5/19/09 to 6/16/09	6	5
6/17/09 to 7/13/09	6	4
7/14/09 to 8/12/09	4	11
8/13/09 to 9/10/09	11	3
9/11/09 to 10/8/09	3	3
10/9/09 to 11 16/09	3	6
11/17/09 to 12 10/09	11	3
12/11/09 to 12/31/09	6	3
1/1/10 to 2/16/10	10	3
2/17/10 to 3/8/10	9	5
3/9/10 to 4/12/10	8	4
4/13/10 to 5/6/10	11	8
5/7/10 to 6/14/10	23	10
6/15/10 to 7/19/10	10	13
7/20/10 to 8/16/10	12	7
8/17/10 to 9/13/10	10	3
9/14/10 to 10/13/10	10	5
10/14/10 to 11/15/10	9	5
11/16/10 to 12/13/10	11	8
12/14/10 to 1/14/11	3	3
1/15/11 to 2/9/11	3	8
2/10/11 to 3/14/11	5	3
3/15/11 to 4/11/11	4	3
4/10/11 to 5/10/11	10	5
5/11/11 to 6/9/11	3	3
6/10/11 to 7/11/11	13	6
7/12/11 to 8/9/11	11	9
8/10/11 to 9/12/11	10	6
9/13/11 to 10/12/11	6	4
10/13/11 to 11/10/11	10	4
11/11/11 to 12/16/11	5	3
12/17/11 to 1/10/12	3	3
1/11/12 to 2/13/12	10	3
2/14/12 to 3/13/12	3	3
3/24/12 to 4/12/12	12	13
4/13/12 to 5/10/12	10	3
5/11/12 to 6/18/12	10	14
6/19/12 to 7/17/12	4	3
7/18/12 to 8/6/12	4	4
8/7/12 to 9/18/12	10	3
9/19/12 to 10/9/12	10	3
10/10/12 to 11/13/12	6	3
11/14/12 to 12/14/12	11	3
12/15/12 to 1/11/13	10	3
1/14/13 to2/15/13	21	3

2/16/13 to 3/9/13	13	5
3/10/13 to 4/16/13	9	26
4/17/13 to 5/13/13	10	4

With regards to criterion #1, as shown in table C-3 BOD_5 and TSS effluent concentrations are consistently lower than the concentrations in the secondary treatment standards allowed for BOD_5 and TSS. The 95th percentile value for the average monthly concentration of BOD_5 is 15.6 mg/L and the 95th percentile value for the average monthly concentration of TSS is 24 mg/L. These values are both consistently under the minimal level for the 30-day average for the secondary treatment standard of 30 mg/L for both BOD_5 and TSS. The Parma WWTP has been able to maintain BOD_5 and TSS effluent concentrations well below secondary treatment standards, and therefore it does not meet criterion #1 and does not qualify for reduced BOD_5 and TSS effluent limits.

Mass-Based Limits

40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

$$\text{Mass based limit (lb/day)} = \text{concentration limit (mg/L)} \times \text{design flow (mgd)} \times 8.34^{1}$$

Use of Technology-based Effluent Limits in the Draft Permit

The concentration and removal rate limits for BOD_5, TSS and pH are the technology-based effluent limits of 40 CFR 133.102.

B. Water Quality-based Effluent Limits

Water quality-based effluent limits (WQBELs) were established for *E. coli*, TRC, TP, TSS and pH using ID's WQS and the methods described below.

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Discharges to state or tribal waters must also comply with limitations imposed by the state or tribe as part of its certification of NPDES permits under section 401 of the CWA. 40 CFR 122.4(d) prohibits the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected states. The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state or tribal water quality standard, including narrative criteria for water quality, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

[1] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

Reasonable Potential Analysis

When evaluating the effluent to determine if water quality-based effluent limits are needed, based on numeric criteria, EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific chemical, then the discharge has the reasonable potential to cause or contribute to an exceedance of the applicable water quality standard, and a WQBEL is required.

Sometimes it is appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and when the receiving water meets the criteria necessary to protect the designated uses of the water body. In the draft CWA 401 certification, the IDEQ authorized a 25% mixing zone for ammonia and chlorine.

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. WLAs are determined in one of the following ways:

1. TMDL-based WLA

   Where the receiving water quality does not meet WQS, the WLA is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating WQS.

   The *LBR TMDL 2015 Addendum* established WLAs for *E. coli* and TSS the Parma WWTP. The draft permit includes limits based on those WLAs. In addition, a limit for TP was developed based on the downstream *SR-HC TMDL*.

2. Mixing zone-based WLA

   When the State authorizes a mixing zone for the discharge as part of the 401 certification, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone and the background concentrations of the pollutant. The WLAs for TRC were derived using a mixing zone, for which, according to the ID WQS Mixing Zone Policy Section 060.01(e)(iv), “the

mixing zone is not to include more than twenty-five (25%) percent of the volume of the stream flow."

3. Criteria-based WLA

In cases where a mixing zone is not authorized, either because the receiving water already exceeds the criterion, the receiving water flow is too low to provide dilution, or the state does not authorize one, the criterion becomes the WLA. Establishing the criterion as the wasteload allocation ensures that the permittee will not cause or contribute to an exceedance of the criterion.

Once a WLA is developed, EPA calculates effluent limits that are protective of the WLA using statistical procedures described in Appendix E.

Water Quality-Based Effluent Limits

The WQBELs applicable to the facility are discussed below and summarized in Table C-4.

Table C - 4 Water Quality-Based Effluent Limits

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
pH[1]	standard units (s.u.)	6.5-9.5		
***E. coli* Bacteria**[2]	#/100 ml	126	—	576 instantaneous max limit
TSS	mg/L	17.5 4-month rolling average		
	lb/day	99.2 4-month rolling average		
TRC [3]	mg/L	0.074	—	0.186
	lb/day	0.771	—	1.05
TP, as P (Final) Applies May - September	mg/L	0.070	0.141	—
	lb/day	0.40	0.80	—

1. The pH range must be maintained at all times.
2. The permittee must report the geometric mean *E. coli* concentration.
3. Any sample analyzed in accordance with a method having the appropriate MDL and ML and found to be below the ML will be considered in compliance with the permit limits unless other monitoring information indicates a violation.

pH

The Idaho water quality standards (IDAPA 58.01.02.250.01.a) require surface waters of the state to have a pH value within the range of 6.5 - 9.5 s.u. The state 401 certification does not authorize a mixing zone for pH. Therefore, this criterion must be met when the effluent is discharged to the receiving water.

E. coli

Sand Hollow Creek at the point of discharge is designated for secondary contact recreation. Waters of the State of Idaho that are designated for recreation are not to contain *E. coli* bacteria in concentrations exceeding 126 organisms per 100 ml as a geometric mean based on a minimum of five samples taken every three to seven days over a thirty day period (IDAPA 58.01.02.251.01.a). Sand Hollow Creek at the point of discharge is listed as impaired for fecal coliform. The *LBR TMDL 2015 Addendum* provided a WLA for *E. coli* of 3×10^9 cfu/day for the Parma WWTP. This WLA is calculated directly based on a monthly geometric mean of 126 cfu/100 ml and the design flow of the facility of 0.68 mgd.

The permit contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml and a monitoring schedule to determine compliance. This limit is the same as in the existing permit. This limit is consistent with the assumptions and requirements of the *LBR TMDL 2015 Addendum.*

The Idaho water quality standards state that for secondary contact recreation a single water sample that exceeds 576 organisms/100 ml indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. (IDAPA 58.01.02.251.01.b.i). The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent (EPA, 1991). Because a single sample value exceeding 576 organisms/100 ml may indicate an exceedance of the geometric mean criterion, the EPA has included an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 576 organisms/100 ml, in addition to a monthly geometric mean limit of 126 organisms/100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding the geometric mean criterion for *E. coli* and provide warning of and opportunity to avoid possible non-compliance with the geometric mean criterion.

The analysis for the existing permit incorrectly identified the designated use in Sand Hollow Creek as primary contact recreation. Because of this incorrect designation, the existing permit established an instantaneous maximum limit of 406 CFU/100 ml. In contrast, the instantaneous maximum limit for a facility that discharges to water designated for secondary contact recreation is 576 CFU/100 ml.

EPA is including the less stringent, instantaneous maximum limit of 576 CFU/100 ml in the draft permit. This relaxed limit meets the exception to the prohibition on backsliding (See Part IV.F of this Fact Sheet), is consistent with IDEQ's antidegradation policy (See CWA 401 certification) and is consistent with the assumptions and requirements of the *LBR TMDL 2015 Addendum*

Total Residual Chlorine

The Parma WWTP uses chlorine disinfection. In the existing permit, TRC limits were based on an assessment of available technology and expressed as an average monthly limit of 0.5 mg/L and a maximum daily limit of 0.75 mg/L. EPA determined that there is reasonable potential for TRC to cause or contribute to an excursion of Idaho's WQS (see Appendix D). Therefore, water quality-based effluent limits were developed for TRC and found to be more stringent than the technology-based limits.

Since 40 CFR 122.45(b) and (f) require limitations for POTWs to be expressed as mass based limits using the design flow of the facility, mass-based limits for TRC are calculated as follows:

Average Monthly Limit= 0.074 mg/L x 0.68 mgd x 8.34 = 0.42 lb/day

Maximum Daily Limit = 0.186 mg/L x 0.68 mgd x 8.34 = 1.05 lb/day

Total Phosphorus

The EPA has determined that the discharge of TP from the Parma WWTP has reasonable potential to cause or contribute to the violations of Idaho's water quality criteria for nutrients from May to September. The permit includes final water quality based effluent limits for TP based on the target concentration from the SR-HC TMDL. Further, the permit includes interim limits to cap nutrient discharges at current levels to prevent any new contribution to this impairment. (See Appendix E).

Total Suspended Solids (TSS)

Sand Hollow Creek (AU 17050114SW017_03) is impaired for sediment. The *LBR TMDL 2015 Addendum* established WLAs for the Parma WWTP for sediment. On Table 26 of the *LBR TMDL 2015 Addendum* the WLA is 99.2 lb/day as a 4-month average. This as the load based on a concentration of 17.5 mg/L and the facility design flow of 0.68 mgd. IDEQ's 401 certification of the draft permit states that IDEQ expects this and future permits to contain a 4-month average effluent limit of 17.5 mg/L TSS with an associated load based on the permitted design flow of the facility. The concentration and load from the TMDL are incorporated directly into the permit as 4-month rolling averages.

Residues

The Idaho water quality standards (IDAPA 58.01.02.200.05) require surface waters of the state to be free from floating, suspended or submerged matter of any kind in concentrations causing nuisance or objectionable conditions that may impair designated beneficial uses. The draft permit contains a narrative limitation prohibiting the discharge of such materials.

C. Determining Final Limits

Table C-5 below summarizes the numeric effluent limits that are in the proposed permit. The final limits are the more stringent of technology treatment requirements, water quality based limits, or limits retained as the result of anti-backsliding analysis or to meet the state's antidegradation policy. The rationale for each limit is explained below.

Table C - 5 Proposed Effluent Limits

Parameter	Units	Effluent Limits			Basis
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	
BOD_5	mg/L	30	45	—	TBEL
	lb/day	170	255		
	% removal	85% (min)	—	—	
TSS	mg/L	30	45		TBEL
	lb/day	170	255		
	% removal	85% (min)	—	—	

Parameter	Units	Effluent Limits			Basis
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	
	Lb/day	99.2 4-month rolling average			WQBEL
pH	s.u.	6.5-9.0			WQBEL
E. Coli Bacteria	#/100 ml	126[3]	—	576 instantaneous max limit	WQBEL
TRC (Final)	mg/L	0.074	—	0.19	WQBEL
	lb/day	0.42		0.11	
TP, as P (Final) Applies May – September	mg/L	0.070	0.141	—	WQBEL
	lb/day	0.40	0.80	—	

Five-Day Biochemical Oxygen Demand (BOD_5)

Where secondary treatment standards apply, the permit should include effluent limitations in the permit consistent with secondary treatment standards and regulatory requirements in 40 CFR 122.45(d)(2). Although the existing permit contains limits for equivalent to secondary treatment, it was determined that the facility has been meeting secondary treatment standards so they have been applied in the draft permit (see Appendix C, Section A).

pH

The draft permit incorporates the more stringent lower limit of the water quality standards (6.5 standard units) and the more stringent upper limit of the technology-based limits (9.0 standard units).

Ammonia, Total (as Nitrogen)

The reasonable potential analysis shows that there is no reasonable potential for the facility's discharge to cause or contribute to an exceedance of the acute or chronic criterion, therefore, effluent limits for ammonia are not required. Ammonia is a parameter commonly monitored for POTWs to determine performance. Monitoring will again be required, but will required quarterly instead of monthly and no longer limited to one year of the permit term.

Escherichia coli (E. coli) Bacteria

The draft permit includes water quality based effluent limits for E. coli.

Total Phosphorus

The EPA has determined that the discharge of TP from the Parma WWTP has reasonable potential to cause or contribute to the violations of Idaho's water quality criteria for nutrients from May to September. The permit includes final water quality based effluent limits for TP based on the target concentration from the SR-HC TMDL. Further, the permit includes interim limits to cap nutrient discharges at current levels to prevent any new contribution to this impairment. (See Appendix E).

Appendix D: Reasonable Potential and Water Quality-Based Effluent Limit Calculations

Federal regulations at 40 CFR 122.44(d)(1) require that permits contain limits when a discharge causes or has reasonable potential to cause or contribute to an excursion of a narrative or numeric water quality standard. The following describes the process EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of Idaho's federally approved water quality standards. Pollutants of concern were determined using the facility application and DMR data (see Section II.B.).

See Appendix F for a discussion of the TP analysis.

For Total Kjeldahl Nitrogen, nitrate/nitrate and total dissolved solids, levels in the effluent are such that they will not cause impairments to the receiving water. Additionally, dissolved oxygen levels in the effluent are within an acceptable range and there is no indication the discharge would exert a significant oxygen demand on the receiving water.

A reasonable potential analysis was conducted for ammonia and TRC using available discharge data, as shown below. The results of this analysis show that an effluent limit is not needed for ammonia at this time, but water quality based effluent limits are needed for TRC.

In order to conduct the reasonable potential analyses, EPA used the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991). EPA uses a steady state model, which calculates WLAs at critical conditions that are usually a combination of reasonable worst-case assumptions of receiving water flow, effluent pollutant concentrations and receiving water concentrations.

Sections A, B and C below discuss in general how the reasonable potential calculations are done and gives specific calculations for ammonia and TRC. These sections describe the process EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of Idaho's federally approved water quality standards. EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential.

To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential and a water quality-based effluent limit must be included in the permit. This section discusses how the maximum projected receiving water concentration is determined.

A. Mass Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_dQ_d = C_eQ_e + C_uQ_u \qquad \text{(Equation D-1)}$$

where,

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)

C_e = Maximum projected effluent concentration
C_u = 95th percentile measured receiving water upstream concentration
Q_d = Receiving water flow rate downstream of the effluent discharge = $Q_e + Q_u$
Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30Q5)

When the mass balance equation is solved for C_d, it becomes:

$$C_d = \frac{C_e Q_e + C_u Q_u}{Q_e + Q_u} \quad \text{(Equation D-2)}$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with the receiving stream. If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_e Q_e + C_u (Q_u \times MZ)}{Q_e + (Q_u \times MZ)} \quad \text{(Equation D-3)}$$

B. Maximum Projected Effluent Concentration

To calculate the maximum projected effluent concentration, EPA has used the procedure described in section 3.3 of the TSD, "Determining the Need for Permit Limits with Effluent Monitoring Data." In this procedure, the 99th percentile of the effluent data is the maximum projected effluent concentration in the mass balance equation.

To calculate the maximum projected effluent concentration for ammonia, EPA has used the procedure described in section 3.3 of the TSD, "Determining the Need for Permit Limits with Effluent Monitoring Data." In this procedure, the 99th percentile of the effluent data is the maximum projected effluent concentration in the mass balance equation.

Since there are a limited number of data points available, the 99th percentile is calculated by multiplying the maximum reported effluent concentration by a "reasonable potential multiplier" (RPM). The RPM is the ratio of the 99th percentile concentration to the maximum reported effluent concentration. The RPM is calculated from the coefficient of variation (CV) of the data and the number of data points. The CV is defined as the ratio of the standard deviation of the data set to the mean, but when fewer than 10 data points are available, the TSD recommends making the assumption that the CV is equal to 0.6.

Using the equations in section 3.3.2 of the TSD, the reasonable potential multiplier (RPM) is calculated based on the CV and the number of samples in the data set as follows. The following discussion presents the equations used to calculate the RPM, and also works through the calculations for the RPM for ammonia and TRC as examples.

First, the percentile represented by the highest reported concentration is calculated.

$$p_n = (1 - \text{confidence level})^{1/n} \quad \text{(Equation D-4)}$$

where,
p_n = the percentile represented by the highest reported concentration

n = the number of samples
confidence level = 99% = 0.99

The data set contains 11 ammonia samples collected from the effluent, therefore:

$p_n = (1\text{-}0.99)^{1/11}$
$p_n = 0.658$

The data set contains 93 TRC samples collected from the effluent, therefore:

$p_n = (1\text{-}0.99)^{1/93}$
$p_n = 0.95$

This means that we can say, with 99% confidence, that the maximum reported effluent concentration is greater than the 66th percentile for ammonia and the 95th percentile for TRC.

The reasonable potential multiplier (RPM) is the ratio of the 99th percentile concentration (at the 99% confidence level) to the maximum reported effluent concentration. This is calculated as follows:

$RPM = C_{99}/C_p$ (Equation D-5)

Where,
$C = \exp(z\sigma - 0.5\sigma^2)$ (Equation D-6)

Where,
$\sigma^2 = \ln(CV^2 + 1)$ (Equation D-7)
$\sigma = \sqrt{\sigma^2}$
CV = coefficient of variation = (standard deviation) ÷ (mean)
z = the inverse of the normal cumulative distribution function at a given percentile

In the case of ammonia:

CV = coefficient of variation = 0.6
$\sigma^2 = \ln(CV^2 + 1)$
$\sigma = \sqrt{\sigma^2} = 0.55$
$RPM = C_{99}/C_{66} = 2.9$

In the case of chlorine:

CV = coefficient of variation = 0.095
$\sigma = \sqrt{\sigma^2} = 0.095$
$RPM = 1.07$

The maximum projected effluent concentration is determined by simply multiplying the maximum reported effluent concentration by the RPM:

$C_e = (RPM)(MRC)$ (Equation D-8)

where MRC = Maximum Reported Concentration

In the case of ammonia

$C_e = (2.9)(4.80 \text{ mg/L}) = 13.9 \text{ mg/L}$

In the case of chlorine

$C_e = (1.07)(0.5 \text{ mg/L}) = 0.53 \text{ mg/L}$

C. Maximum Projected Receiving Water Concentration

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the most stringent criterion for that pollutant. The maximum projected receiving water concentration is calculated from Equation D-3:

$$C_d = \frac{C_e - C_u}{D} + C_u \qquad \text{(Equation D-3)}$$

In the case of ammonia:

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
C_e = Maximum projected effluent concentration = 15.08 mg/L
C_u = 95th percentile measured receiving water upstream concentration = 0.10 mg/L
Q_e = Effluent flow rate (set equal to the design flow of the WWTP) = 1.05 cfs
Q_u = Receiving water low flow rate upstream of the discharge (30Q5) = 52.85 cfs
MZ = Mixing zone allowance = 0.25

$$C_d = \frac{(13.9 \text{ mg/L})(1.07 \text{ cfs}) + (0.10 \text{ mg/L})(52.85 \text{ cfs} \times 0.25)}{1.07 \text{ cfs} + (52.85 \text{ cfs} \times 0.25)} = 1.1 \text{ mg/L}$$

The acute and chronic water quality criteria for this parameter must be calculated based on ambient water temperature and pH. The 95th percentile value of the ambient monitoring data submitted by the facility was used for pH and temperature.

Acute

$$CMC = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

$$= \frac{0.275}{1 + 10^{7.204 - 8.1}} + \frac{39.0}{1 + 10^{8.1 - 7.204}} = 4.64 \text{ mg/L}$$

Chronic

$$CCC = \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \times MIN(2.85, 1.45 \times 10^{0.028(25-T)})$$

$$CCC = \frac{0.0577}{1 + 10^{7.688 - 8.1}} + \frac{2.487}{1 + 10^{8.1 - 7.688}} \times MIN(2.85, 1.45 \times 10^{0.028(25-22.62)}) = 1.24 \text{ mg/L}$$

Because the projected receiving water concentrations are lower than the criteria, a water quality-based effluent limit is not necessary for ammonia.

In the case of chlorine:

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
C_e = Maximum projected effluent concentration = 0.53 mg/L
C_u = 95th percentile measured receiving water upstream concentration = 0 mg/L
Q_e = Effluent flow rate (set equal to the design flow of the WWTP) = 1.05 cfs
Q_u = Receiving water low flow rate upstream of the discharge (1Q10) = 36.96 cfs
MZ = Mixing zone allowance = 0.25

$$C_{d(acute)} = \frac{(0.53 \text{ mg/L})(1.05 \text{ cfs}) + (0 \text{ mg/L})(36.96 \text{ cfs} \times 0.25)}{1.05 \text{ cfs} + (36.96 \text{ cfs} \times 0.25)} = 0.054 \text{ mg/L} = 54 \text{ µg/L}$$

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
C_e = Maximum projected effluent concentration = 0.53 mg/L
C_u = 95th percentile measured receiving water upstream concentration = 0 mg/L
Q_e = Effluent flow rate (set equal to the design flow of the WWTP) = 1.05 cfs
Q_u = Receiving water chronic low flow rate upstream of the discharge (7Q10) = 48.04 cfs
MZ = Mixing zone allowance = 0.25

$$C_{d(chronic)} = \frac{(0.53 \text{ mg/L})(1.05 \text{ cfs}) + (0 \text{ mg/L})(48.04 \text{ cfs} \times 0.25)}{1.05 \text{ cfs} + (48.04 \text{ cfs} \times 0.25)} = 0.043 \text{ mg/L} = 43 \text{ µg/L}$$

The aquatic health criteria for chlorine in Idaho (IDAPA 58.01.02.210) are 19 µg/L and 11 µg/L for acute and chronic, respectively. The maximum projected receiving water concentration at the edge of the mixing zone is higher, and therefore the discharge has a reasonable potential to cause or contribute to an excursion of the chlorine criteria.

Appendix E: WQBEL Calculations

The following calculations demonstrate how the water quality-based effluent limits (WQBELs) in the draft permit were calculated. The discussion in Section A below presents the general equations used to calculate the water quality-based effluent limits and works through the calculations for the Total Residual Chlorine WQBEL as an example. Section B describes the process used to determine limits for TP.

A. Total Residual Chlorine Calculation

Idaho's WQS provide both acute and chronic aquatic life criteria for TRC, as well as an allocation of up to 25% of the stream flow for mixing zones, assuming zero background concentration. Using these values, an effluent limit was determined using the following calculations.

Step 1- Determine the WLA

The acute and chronic aquatic life criteria are converted to acute and chronic waste load allocations (WLA_{acute} or $WLA_{chronic}$) for the receiving waters based on the following mass balance equation:

$$Q_dC_d = Q_eC_e + Q_uC_u$$

where:
Q_d = downstream flow = $Q_u + Q_e$
C_d = aquatic life criteria that cannot be exceeded downstream
$C_{d(acute)}$ = 19 µg/L
$C_{d(chronic)}$ = 11 µg/L
Q_e = effluent design flow = 1.05 cfs
C_e = concentration of pollutant in effluent = WLA_{acute} or $WLA_{chronic}$
Q_u = upstream flow = 48.04 cfs (7Q10), 36.96 cfs (1Q10)
C_u = upstream background concentration of pollutant = 0 (no data available therefore, assume there is no background concentration)

Rearranging the above equation to determine the effluent concentration (C_e) or the wasteload allocation (WLA) results in the following:

$$C_e = WLA = \frac{Q_dC_d - Q_uC_u}{Q_e}$$

when a mixing zone is allowed, this equation becomes:

$$C_e = WLA = \frac{C_d(Q_u \times \%MZ)}{Q_e} + \frac{C_dQ_e - Q_uC_u(\%MZ)}{Q_e}$$

where %MZ is the mixing zone allowable by the state standards. The Idaho water quality standards at IDAPA 58.01.02.060 allow twenty-five percent (25%) of the receiving water to be used for dilution for aquatic life criteria. The effluent limits have been derived using Idaho's

guidelines for mixing zone. However, establishing a mixing zone is a state discretionary function; if the state does not certify a mixing zone in the 401 certification process the effluent limits will be recalculated without a mixing zone.

$$WLA_{acute} = \frac{C_d(Q_u \times \%MZ) + C_dQ_e}{Q_e} - \frac{Q_uC_u(\%MZ)}{Q_e}$$

$$= \frac{(19\ \mu g/L)(36.96\ cfs \times 0.25) + (19\ \mu g/L \times 1.05\ cfs)}{1.05\ cfs} - \frac{36.96 \times 0\ (0.25)}{1.05\ cfs} = 186.2\ \mu g/L$$

$$WLA_{chronic} = \frac{(11\ \mu g/L)(48.04\ cfs \times .25) + (11\ \mu g/L \times 1.05\ cfs)}{1.05\ cfs} - \frac{48.04\ cfs \times 0\ (.25)}{1.05\ cfs} = 136.8 \mu g/L$$

Step 2 - Determine the LTA

The acute and chronic WLAs[2] are then converted to Long Term Average concentrations (LTA_{acute} and $LTA_{chronic}$) using the following equations:

$$LTA_{acute} = WLA_{acute} \times e^{[0.5\ \sigma^2 - z\ \sigma]}$$

where,
$\sigma^2 = \ln(CV^2 + 1)$
$z = 2.326$ for 99th percentile probability basis
CV = coefficient of variation = 0.6

$$LTA_{chronic} = WLA_{chronic} \times e^{[0.5\ \sigma_4^2 - z\ \sigma_4]}$$

where,
$\sigma^2 = \ln(CV^2/4 + 1)$
$z = 2.326$ for 99th percentile probability basis
CV = 0.6

Step 3

To protect a waterbody from both acute and chronic effects, the more limiting of the calculated LTA_{acute} and $LTA_{chronic}$ is used to derive the effluent limitations. The TSD recommends using the 95th percentile for the Average Monthly Limit (AML) and the 99th percentile for the Maximum Daily Limit (MDL). The LTA_{acute} is lower than the $LTA_{chronic}$ and will be used to determine permit limits in Step 4 below.

[2] WLA multipliers were determined using Table 5-1 Back Calculations of Long Term Average from the TSD, using the 99th percentile and 0.5 CV for acute and chronic criteria

Step 4 - Determine the Permit Limits

The maximum daily limit (MDL) and the average monthly limit (AML) would be calculated as follows:

$MDL = LTA_{acute} \times e^{[z\sigma - 0.5\sigma^2]}$

where,
$\sigma^2 = \ln(CV^2 + 1)$
$z = 2.326$ for 99_{th} percentile probability basis
$CV = 0.6$

MDL = 0.186 mg/L

$AML = LTA_{acute} \times e^{[z\sigma_n - 0.5\sigma_n^2]}$

where,
$\sigma^2 = \ln(CV^2/n + 1)$
$z = 1.645$ for 95_{th} percentile probability basis
$CV = 0.6$
n = number of sampling events required per month for chlorine = 20

AML = 0.074 mg/L

The calculations are presented in the Table below:

Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

Facility Name	Parma WWTP
Facility Flow (mgd)	0.68
Facility Flow (cfs)	1.05

Critical River Flows	(IDAPA 58.01.02 03. b)	Annual Crit. Flows	Annual Crit. Flows
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	**1Q10**	37	37.0
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	**7Q10 or 4B3**	48	48.0
Ammonia	**30B3/30Q10** (seasonal)	53	53.0
Human Health - Non-Carcinogen	**30Q5**	53	52.9
Human Health - carcinogen	**Harmonic Mean Flow**		--

Receiving Water Data		Notes:	Annual Crit. Flows
Hardness, as mg/L $CaCO_3$	*** Enter Hardness on WQ Criteria tab ***	5th % at critical flows	
Temperature, °C	Temperature, °C	95th percentile	22.62
pH, S.U.	pH, S.U.	95th percentile	8.1

Pollutants of Concern			**AMMONIA,** default: cold water, fish early life stages present	**CHLORINE (Total Residual)**
Effluent Data	**Number of Samples in Data Set (n)**		11	93
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		0.60	0.095
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		4,800	500
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only			
Receiving Water Data	**90th Percentile Conc., µg/L - (C_u)**		100	
	Geometric Mean, µg/L, Human Health Criteria Only			
Applicable	Aquatic Life Criteria, µg/L	Acute	4,641	19.
	Aquatic Life Criteria, µg/L	Chronic	1,244	11.
	Aquatic Life - Acute	**1Q10**	25%	25%
Percent River Flow Default Value = **25%**	Aquatic Life - Chronic	7Q10 or 4B3	--	25%
	Ammonia	30B3 or 30Q10	25%	25%
	Human Health - Non-Carcinogen	30Q5	--	25%
	Human Health - carcinogen	Harmonic Mean	--	25%
Calculated Dilution Factors (DF)	Aquatic Life - Acute	1Q10	9.8	9.8
	Aquatic Life - Chronic	7Q10 or 4B3	--	12.4
	Ammonia	30B3 or 30Q10	13.6	13.6

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		0.555	0.095
P_n	=(1-confidence level)$^{1/n}$, where confidence level =	**99%**	0.658	0.952
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)-0.5\sigma^2]$, where	**99%**	2.90	1.07
Statistically projected critical discharge concentration (C_e)			13915.65	532.55
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	1512.12	54.43
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	1116.19	42.89
Reasonable Potential to exceed Aquatic Life Criteria			**NO**	**YES**

Aquatic Life Effluent Limit Calculations

Number of Compliance Samples Expected per month (n)				20
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			--	20
LTA Coeff. Var. (CV), decimal	(Use CV of data set or default = 0.6)		--	0.600
Permit Limit Coeff. Var. (CV), decimal	(Use CV from data set or default = 0.6)		--	0.600
Acute WLA, ug/L	$C_d = (\text{Acute Criteria} \times MZ_a) - C_u \times (MZ_a-1)$	Acute	--	185.9
Chronic WLA, ug/L	$C_d = (\text{Chronic Criteria} \times MZ_c) - C_u \times (MZ_c-1)$	Chronic	--	136.6
Long Term Ave (LTA), ug/L	WLAc x $\exp(0.5\sigma^2-z\sigma)$, Acute	**99%**	--	59.7
(99th % occurrence prob.)	WLAa x $\exp(0.5\sigma^2-z\sigma)$; ammonia n=30, Chronic	**99%**	--	72.0
Limiting LTA, ug/L	used as basis for limits calculation		--	59.7
Applicable Metals Criteria Translator (metals limits as total recoverable)			--	--
Average Monthly Limit (AML), ug/L , where % occurrence prob =		**95%**	**--**	**74**
Maximum Daily Limit (MDL), ug/L , where % occurrence prob =		**99%**	**--**	**186**
Average Monthly Limit (AML), mg/L			**--**	**0.07**
Maximum Daily Limit (MDL), mg/L			**--**	**0.19**
Average Monthly Limit (AML), lb/day			**--**	**0.42**
Maximum Daily Limit (MDL), lb/day			**--**	**1.05**

References: Idaho Water Quality Standards http://adminrules.idaho.gov/rules/current/58/0102.pdf
Technical Support Document for Water Quality-based Toxics Control, US EPA, March 1991, EPA/505/2-90-001

Appendix F: Total Phosphorus Reasonable Potential

The EPA has determined that the discharge of total phosphorus (TP) from the Parma WWTP has the reasonable potential to cause or contribute to violations of Idaho's water quality criteria for nutrients from May – September. Therefore, WQBELs for TP are proposed. In addition, interim year-round WQBELs are included in the permit capping nutrient discharges at current levels to prevent any new contribution to the impairment.

A. Applicable Water Quality Criteria

Approximately 2.5 miles downstream from the City of Parma WWTP Sand Hollow Creek (AU 17050114SW017_06) is listed as impaired for cause unknown (nutrients suspected). Sand Hollow flows into the Hells Canyon Segment of the Snake River, which is impaired due to excess nutrients.

The State of Idaho has a narrative water quality criterion for nutrients which reads, "Surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses." Where a State or Tribe has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the RP to cause, or contributes to an excursion above a narrative criterion within an applicable State or Tribal WQS, the permitting authority must establish effluent limits using one or more of the options provided in 40 CFR 122.44(d)(1)(vi).

Interpretation of Narrative Criterion

Both nitrogen and phosphorus can contribute to violations of the State of Idaho's WQS that result from excess nutrients. The EPA-approved *Snake River Hells Canyon (SR-HC) TMDL* (IDEQ 2003) concluded that phosphorus is the limiting nutrient in the Snake River. The *SR-HC TMDL* established load allocations for all the tributaries, including Sand Hollow Creek. The load allocations are based upon a TP concentration of 0.07 mg/L at the mouth of the tributaries. The EPA has determined that the TP concentration of 70 µg/L from the *SR-HC TMDL* is the appropriate value to interpret Idaho's narrative criterion for nutrients for the purposes of determining reasonable potential and, if necessary, for calculating effluent limits for TP. The criteria apply from May – September as an average monthly concentration. This is the period of time during which the SR-HC TMDL establishes in-stream targets and allocations for TP.

B. Reasonable Potential

Federal regulations require that effluent limitations in NPDES permits "must control all pollutants or pollutant parameters…which…are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality (40 CFR 122.44(d)(1)(i))." The EPA reviewed the Parma WWTP discharge of TP to determine if the facility has the RP to cause or contribute to excursions above Idaho's narrative water quality criterion for excess nutrients.

Ambient Concentration

Federal regulations require that reasonable potential analyses use procedures which account for existing controls on point and nonpoint sources of pollution (40 CFR 122.44(d)(1)(ii)). Existing

controls on point and nonpoint sources of pollution are accounted for by considering the upstream concentration of the pollutant of concern in the reasonable potential analysis.

The upstream TP concentrations are shown in the following table.

Table F - 1 Upstream TP Concentrations in µg/L

Minimum	220
Average	328
Maximum	570
Count (# of data points)	10

The minimum TP concentration measured upstream from the discharge is 220 µg/L, which is higher than the 70 µg/L interpretation of Idaho's narrative criterion for nutrients. Therefore, the Sand Hollow Creek cannot provide dilution of the Parma WWTP's discharge of TP downstream, and the 70 µg/L effluent limit interpretation of Idaho's narrative nutrient criterion must be applied at the end-of-pipe, without allowing for dilution (i.e., no mixing zone).

RP analyses may account for the dilution of the effluent in the receiving water, where appropriate (40 CFR 122.44(d)(1)(ii)). Because the upstream concentration of TP is consistently higher than the interpretation of Idaho's narrative criterion for nutrients, dilution may not be considered in this case.

Because dilution cannot be considered and the effluent concentration of TP is greater than the 70 µg/L, the discharge has the RP to cause or contribute to excursions above WQS for nutrients. Therefore, the EPA must establish effluent limits for TP in the permit [40 CFR 122.44(d)(1)(i – iii)] based on the HC-SR TMDL.

Effluent TP Loading

The EPA also reviewed the effluent loading data for the Parma WWTP.

Based on discharge monitoring report data from the Parma WWTP, EPA calculated the summary statistics in Table E-1, below, using actual reported flows and TP concentrations.

Table F - 2 Parma WWTP Total Phosphorus Loading Summary

Statistic	Load (lb/day)
Minimum	0.805
Mean	3.79
Maximum	7.62
Standard Deviation	1.89

C. Effluent Limits

Wasteload Allocation

According to Section 6.2.1.2 of the 2010 *U.S. EPA Permit Writers' Manual* and Section 5.4 of the TSD, WLAs need not be established by a TMDL, but may instead be calculated for an individual point source as part of the permitting process.

Because dilution may not be considered in this case due to high concentrations of TP upstream from the discharge, the WLA is equal to the interpreted narrative criterion.

$$C_e = WLA = C_d = 70\ \mu g/L$$

Translating the Wasteload Allocation to Effluent Limits

NPDES regulations at 40 CFR 122.45(f) require effluent limits in NPDES permits to be expressed in terms of mass, and states that "pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the Permittee to comply with both limitations." Section 5.7.1 of the TSD states that the EPA "recommends that permit limits on both mass and concentration be specified for effluents discharging into waters with less than 100 fold dilution." Because dilution cannot be considered in this case, the EPA has established TP limits on both mass and concentration.

NPDES regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as AMLs and AWLs unless impracticable. The EPA has set the AML equal to the 70 µg/L TP WLA.

Consistent with 40 CFR 122.45(d)(2), the EPA has also established an AWL for TP, in addition to the AML. AWLs for TP were calculated by adapting the ratio shown in Table 5-3 of the TSD to an AWL instead of a MDL, using the required sampling frequency of once per week, the 95th percentile probability basis for the average monthly limit, and the 99th percentile probability basis for the AWL. Attainment of the proposed AMLs for TP will require upgrades to the POTW. Therefore, the historic effluent variability for TP may not be representative of future effluent variability. Accordingly, the EPA has assumed that the CV is equal to 0.6, consistent with the recommendation of the TSD when effluent data are not available (see TSD at Page E-3). This results in a ratio between the average monthly and average weekly limit of 2.01:1. Therefore, the average weekly limit is 141 µg/L (70 µg/L × 2.01 = 141 µg/L).

Mass Limits

Mass limits are calculated from the concentration limits discussed above, using the design flow of the POTW, consistent with 40 CFR 122.45(b)(1). The average monthly and average weekly mass limits for TP for the Parma WWTP are as follows:

Average Monthly Limits

0.07 mg/L × 0.68 mgd × 8.34 lbs/gallon = 0.40 lb/day

Average Weekly Limits

0.141 mg/L × 0.68 mgd × 8.34 lbs/gallon = 0.80 lb/day

Interim Limits

The draft permit includes limits capping TP loads from this facility based on current discharge levels. The following calculations were done to determine an average monthly limit derived from the existing performance data for the facility.

Based on discharge monitoring report data from the Parma WWTP, EPA calculated the summary statistics in Table F - 3, below, using actual reported flows and phosphorus concentrations.

Table F - 3 Parma WWTP Total Phosphorus Loading Summary

Statistic	Load (lb/day)
Minimum	0.805
Mean	3.79
Maximum	7.62
Standard Deviation	1.89

Using the monitoring data, lognormal transformations were completed, resulting in the summary statistics in Table F - 4, below.

Table F - 4 Parma WWTP Lognormal Transformed Summary Data

Statistic	Load (lb/day)
Mean	1.19
Variance	0.378

Using the transformed mean and variance, the average monthly limit was determined as described in Appendix E of the TSD, resulting in a limit of 6.45 lb/day.

Appendix G: Surface Water Quality Criteria

200.GENERAL SURFACE WATER QUALITY CRITERIA.

The following general water quality criteria apply to all surface waters of the state, in addition to the water quality criteria set forth for specifically designated waters. (4-5-00)

01. Hazardous Materials. Surface waters of the state shall be free from hazardous materials in concentrations found to be of public health significance or to impair designated beneficial uses. These materials do not include suspended sediment produced as a result of nonpoint source activities. (8-24-94)

02. Toxic Substances. Surface waters of the state shall be free from toxic substances in concentrations that impair designated beneficial uses. These substances do not include suspended sediment produced as a result of nonpoint source activities. (8-24-94)

03. Deleterious Materials. Surface waters of the state shall be free from deleterious materials in concentrations that impair designated beneficial uses. These materials do not include suspended sediment produced as a result of nonpoint source activities. (8-24-94)

04. Radioactive Materials. (7-1-93)

a. Radioactive materials or radioactivity shall not exceed the values listed in the Code of Federal Regulations, Title 10, Chapter 1, Part 20, Appendix B, Table 2, Effluent Concentrations, Column 2. (8-24-94)

b. Radioactive materials or radioactivity shall not exceed concentrations required to meet the standards set forth in Title 10, Chapter 1, Part 20, of the Code of Federal Regulations for maximum exposure of critical human organs in the case of foodstuffs harvested from these waters for human consumption. (7-1-93)

05. Floating, Suspended or Submerged Matter. Surface waters of the state shall be free from floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses. This matter does not include suspended sediment produced as a result of nonpoint source activities. (8-24-94)

06. Excess Nutrients. Surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses. (8-24-94)

07. Oxygen-Demanding Materials. Surface waters of the state shall be free from oxygen-demanding materials in concentrations that would result in an anaerobic water condition. (7-1-93)

08. Sediment. Sediment shall not exceed quantities specified in Sections 250 and 252, or, in the absence of specific sediment criteria, quantities which impair designated beneficial uses. Determinations of impairment shall be based on water quality monitoring and surveillance and the information utilized as described in Section 350. (4-5-00)

09. Natural Background Conditions as Criteria. When natural background conditions exceed any applicable water quality criteria set forth in Sections 210, 250, 251, 252, or 253, the applicable water quality criteria shall not apply; instead, there shall be no lowering of water quality from natural background conditions. Provided, however, that temperature may be increased above natural background conditions when allowed under Section 401. (3-30-07)

210.NUMERIC CRITERIA FOR TOXIC SUBSTANCES FOR WATERS DESIGNATED FOR AQUATIC LIFE, RECREATION, OR DOMESTIC WATER SUPPLY USE.

01. Criteria for Toxic Substances. The criteria of Section 210 apply to surface waters of the state as follows. (5-3-03)

a. Columns B1, B2, and C2 of the following table apply to waters designated for aquatic life use. (5-3-03)
b. Column C2 of the following table applies to waters designated for recreation use. (5-3-03)
c. Column C1 of the following table applies to waters designated for domestic water supply use.

Table G-1. Taken from Idaho Water Quality Standards p. 141					
A		B Aquatic Life		Human health for consumption of:	
(Number) Compound	[a] CAS Number	[b] CMC (µg/L) B1	[b] CCC (µg/L) B2	Water & Organisms (µg/L) C1	Organisms only (µg/L) C2
121 Chlorine		19 k	11 k		
a. Chemical Abstracts Service (CAS) registry numbers which provide a unique identification for each chemical.					
b. See definitions of Acute Criteria (CMC) and Chronic Criteria (CCC), Section 010 of these rules.					

03. Applicability. The criteria established in Section 210 are subject to the general rules of applicability in the same way and to the same extent as are the other numeric chemical criteria when applied to the same use classifications including mixing zones, and low flow design discharge conditions below which numeric standards can be exceeded in flowing waters. (5-3-03)

a. For all waters for which the Department has determined mixing zones to be applicable, the criteria apply at the appropriate locations specified within or at the boundary of the mixing zone(s); otherwise the criteria apply through the waterbody including at the end of any discharge pipe, canal or other discharge point. (4-11-06)

b. Low flow design discharge conditions. Numeric chemical standards can only be exceeded in perennial streams permitted discharges outside any applicable mixing zone when flows are less than the following values: (4-11-06)

Aquatic Life		Human Health	
CMC ("acute" criteria)	1Q10 or 1B3	Non-carcinogens	30Q5
CCC ("chronic" criteria)	7Q10 or 4B3	Carcinogens	Harmonic mean flow

i. Where "1Q10" is the lowest one-day flow with an average recurrence frequency of once in ten (10) years determined hydrologically; (5-3-03)

ii. Where "1B3" is biologically based and indicates an allowable exceedance of once every three (3) years. It may be determined by EPA's computerized method (DFLOW model); (5-3-03)

iii. Where "7Q10" is the lowest average seven (7) consecutive day low flow with an average recurrence frequency of once in ten (10) years determined hydrologically; (5-3-03) iv. Where "4B3" is biologically based and indicates an allowable exceedance for four (4) consecutive days once every three (3) years. It may be determined by EPA's computerized method (DFLOW model); (5-3-03) v. Where "30Q5" is the lowest average thirty (30) consecutive day low flow with an average recurrence frequency of once in five (5) years determined hydrologically; and (5-3-03)

vi. Where the harmonic mean flow is a long term mean flow value calculated by dividing the number of daily flows analyzed by the sum of the reciprocals of those daily flows. (5-3-03)

c. Application of metals criteria. (5-3-03)

i. For metals other than cadmium, for purposes of calculating hardness dependent aquatic life criteria from the equations in Subsection 210.02, the minimum hardness allowed for use in those equations shall not be less than twenty-five (25) mg/l, as calcium carbonate, even if the actual ambient hardness is less than twenty-five (25) mg/ l as calcium carbonate. For cadmium, the minimum hardness for use in those equations shall not be less than ten (10) mg/l, as calcium carbonate. The maximum hardness allowed for use in those equations shall not be greater than four hundred (400) mg/l, as calcium carbonate, except as specified in Subsections 210.03.c.ii. and 210.03.c.iii., even if the actual ambient hardness is greater than four hundred (400) mg/l as calcium carbonate. (3-29-10)

ii. The hardness values used for calculating aquatic life criteria for metals at design discharge conditions shall be representative of the ambient hardnesses for a receiving water that occur at the design discharge conditions given in Subsection 210.03.b. (5-3-03)

iii. Except as otherwise noted, the aquatic life criteria for metals (compounds #1 through #13 in the criteria table of Subsection 210.02) are expressed as dissolved metal concentrations. Unless otherwise specified by the Department, dissolved concentrations are considered to be concentrations recovered from a sample which has passed through a forty-five hundredths (0.45) micron filter. For the purposes of calculating aquatic life criteria for metals from the equations in footnotes e. and i. in the criteria table in Subsection 210.01, the water effect ratio is computed as a specific pollutant's acute or chronic toxicity values measured in water from the site covered by the standard, divided by the respective acute or chronic toxicity value in laboratory dilution water. The water-effect ratio shall be assigned a value of one (1.0), except where the Department assigns a different value that protects the designated uses of the water body from the toxic effects of the pollutant, and is derived from suitable tests on sampled water representative of conditions in the affected water body, consistent with the design discharge conditions established in Subsection 210.03.b. For purposes of calculating water effects ratios, the term acute toxicity value is the toxicity test results, such as the concentration lethal one-half (1/2) of the test organisms (i.e., LC5O) after ninety-six (96) hours of exposure (e.g., fish toxicity tests) or the effect concentration to one-half of the test organisms, (i.e., EC5O) after forty-eight (48) hours of exposure (e.g., daphnia toxicity tests). For purposes of calculating water effects ratios, the term chronic value is the result from appropriate hypothesis testing or regression analysis of measurements of growth, reproduction, or survival from life cycle, partial life cycle, or early life stage tests. The determination of acute and chronic values shall be according to current standard protocols (e.g., those published by the American Society for Testing and Materials (ASTM)) or other comparable methods. For calculation of criteria using site-specific values for both the hardness and the water effect ratio, the hardness used in the equations in Subsection 210.02 shall be as required in Subsection 210.03.c.ii. Water hardness shall be calculated from the measured calcium and magnesium ions present, and the ratio of calcium to magnesium shall be approximately the same in laboratory toxicity testing water as in the site water, or be similar to average ratios of laboratory waters used to derive the criteria. (4-6-05)

iv. Implementation Guidance for the Idaho Mercury Water Quality Criteria. (4-6-05)

(1) The "Implementation Guidance for the Idaho Mercury Water Quality Criteria" describes in detail suggested methods for discharge related monitoring requirements, calculation of reasonable potential to exceed (RPTE) water quality criteria in determining need for mercury effluent limits, and use of fish tissue mercury data in calculating mercury load reductions. This guidance, or its updates, will provide assistance to the Department and the public when implementing the methylmercury criterion. The "Implementation Guidance for the Idaho Mercury Water Quality Criteria" also provides basic background information on mercury in the environment, the novelty of a fish tissue criterion for water quality, the connection between human health and aquatic life protection, and the relation of environmental programs outside of Clean Water Act programs to reducing mercury contamination of the environment. The "Implementation Guidance for the Idaho Mercury Water Quality Criteria" is available at the Department of Environmental Quality, 1410 N. Hilton, Boise, Idaho 83706, and on the DEQ website at http:// www.deq.idaho.gov/media/639808-idaho_mercury_wq_guidance.pdf. (4-6-05)

(2) The implementation of a fish tissue criterion in NPDES permits and TMDLs requires a non-traditional approach, as the basic criterion is not a concentration in water. In applying the methylmercury fish tissue criterion in the context of NPDES effluent limits and TMDL load reductions, the Department will assume change in fish tissue concentrations of methylmercury are proportional to change in water body loading of total mercury. Reasonable potential to exceed (RPTE) the fish tissue criterion for existing NPDES sources will be based on measured fish tissue concentrations potentially affected by the discharge exceeding a specified threshold value, based on uncertainty due to measurement variability. This threshold value is also used for TMDL decisions. Because measured fish tissue concentrations do not reflect the effect of proposed new or increased discharge of mercury, RPTE in these cases will be based upon an estimated fish tissue methylmercury concentration, using projected changes in waterbody loading of total mercury and a proportional response in fish tissue mercury. For the above purposes, mercury will be measured in the skinless filets of sport fish using techniques capable of detecting tissue concentrations down to point zero five (0.05) mg/kg. Total mercury analysis may be used, but will be assumed to be all methylmercury for purposes of implementing the criterion. (4-6-05)

v. Frequency and duration for toxics criteria. Column B1 criteria are concentrations not to be exceeded for a one-hour average more than once in three (3) years. Column B2 criteria are concentrations not to be exceeded for a four-day average more than once in three (3) years. (4-11-06)

04. National Pollutant Discharge Elimination System Permitting. For the purposes of NPDES permitting, interpretation and implementation of metals criteria listed in Subsection 210.02 should be governed by the following standards, that are hereby incorporated by reference, in addition to other scientifically defensible methods deemed appropriate by the Department; provided, however, any identified conversion factors within these documents are not incorporated by reference. Metals criteria conversion factors are identified in Subsection 210.02 of this rule. (5-3-03)

a. "Guidance Document on Dissolved Criteria -- Expression of Aquatic Life Criteria," EPA, October 1993, http://www.deq.idaho.gov/media/827413-epa-guidance-dissolved-criteria-1093.pdf. (4-5-00)

b. "Guidance Document on Dynamic Modeling and Translators," EPA, August 1993, http://www.deq.idaho.gov/media/827417-epa-guidance-dynamic-modeling-translators-0893.pdf. (4-5-00)

c. "Guidance Document on Clean Analytical Techniques and Monitoring," EPA, October 1993, http://www.deq.idaho.gov/media/827421-epa-guidance-analytical-techniques-1093.pdf. (4-5-00)

d. "Interim Guidance on Determination and Use of Water-Effect Ratios for Metals," EPA, February 1994, http://www.deq.idaho.gov/media/827409-epa-guidance-water-effect-ratios-for-metals-0294.pdf. (4-5-00)

05. Development of Toxic Substance Criteria. (4-5-00)

a. Aquatic Life Communities Criteria. Numeric criteria for the protection of aquatic life uses not identified in these rules for toxic substances, may be derived by the Department from the following information: (4-5-00)

i. Site-specific criteria developed pursuant to Section 275; (4-5-00)

ii. Effluent biomonitoring, toxicity testing and whole-effluent toxicity determinations; (4-5-00)

iii. The most recent recommended criteria defined in EPA's Aquatic Toxicity Information Retrieval (ACQUIRE) database. When using EPA recommended criteria to derive water quality criteria to protect aquatic life uses, the lowest observed effect concentrations (LOECs) shall be considered; or (4-5-00)

iv. Scientific studies including, but not limited to, instream benthic assessment or rapid bioassessment. (4-5-00)

b. Human Health Criteria. (4-5-00)

i. When numeric criteria for the protection of human health are not identified in these rules for toxic substances, quantifiable criteria may be derived by the Department from the most recent recommended criteria defined in EPA's Integrated Risk Information System (IRIS). When using EPA recommended criteria to derive water quality criteria to protect human health, a fish consumption rate of seventeen point five (17.5) grams/day, a water ingestion rate of two (2) liters/day and a cancer risk level of 10-6 shall be utilized. (4-11-06)

250.SURFACE WATER QUALITY CRITERIA FOR AQUATIC LIFE USE DESIGNATIONS.

01. General Criteria. The following criteria apply to all aquatic life use designations. Surface waters are not to vary from the following characteristics due to human activities: (3-15-02)

a. Hydrogen Ion Concentration (pH) values within the range of six point five (6.5) to nine point zero (9.0); (3-30-01)

b. The total concentration of dissolved gas not exceeding one hundred and ten percent (110%) of saturation at atmospheric pressure at the point of sample collection; (7-1-93)

02. Cold Water. Waters designated for cold water aquatic life are not to vary from the following characteristics due to human activities: (3-15-02)

a. Dissolved Oxygen Concentrations exceeding six (6) mg/l at all times. In lakes and reservoirs this standard does not apply to: (7-1-93) i. The bottom twenty percent (20%) of water depth in natural lakes and reservoirs where depths are thirty-five (35) meters or less. (7-1-93) ii. The bottom seven (7) meters of water depth in natural lakes and reservoirs where depths are greater than thirty-five (35) meters. (7-1-93) iii. Those waters of the hypolimnion in stratified lakes and reservoirs. (7-1-93)

b. Water temperatures of twenty-two (22) degrees C or less with a maximum daily average of no greater than nineteen (19) degrees C. (8-24-94)

c. Temperature in lakes shall have no measurable change from natural background conditions. Reservoirs with mean detention times of greater than fifteen (15) days are considered lakes for this purpose.(3-15-02)

d. Ammonia. The following criteria are not to be exceeded dependent upon the temperature, T (degrees C), and pH of the water body: (3-15-02) i. Acute Criterion (Criterion Maximum Concentration (CMC)). The one (1) hour average concentration of total ammonia nitrogen (in mg N/L) is not to exceed, more than once every three (3) years, the value calculated using the following equation:

$$CMC = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

ii. Chronic Criterion (Criterion Continuous Concentration (CCC)). (3-15-02) (1) The thirty (30) day average concentration of total ammonia nitrogen (in mg N/L) is not to exceed, more than once every three (3) years, the value calculated using the following equations: (3-15-02) (a) When fish early life stages are likely present:

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) \bullet \text{MIN}(2.85, 145 \bullet 10^{0.028(25-T)})$$

(b) When fish early life stages are likely absent:

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) \bullet 145 \bullet 10^{0.028(25-T)}$$

(2) The highest four-day (4) average within the thirty-day (30) period should not exceed two point five (2.5) times the CCC. (3-15-02)

(3) Because the Department presumes that many waters in the state may have both spring-spawning and fall-spawning species of fish present, early life stages of fish may be present throughout much of the year. Accordingly, the Department will apply the CCC for when fish early life stages are present at all times of the year unless: (3-15-02)

(a) Time frames during the year are identified when early life stages are unlikely to be present, and (3-15-02)

(b) The Department is provided all readily available information supporting this finding such as the fish species distributions, spawning periods, nursery periods, and the duration of early life stages found in the water body; and (3-15-02)

(c) The Department determines early life stages are likely absent. (3-15-02)

e. Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days. (8-24-94)

f. Salmonid Spawning. The Department shall determine spawning periods on a waterbody specific basis taking into account knowledge of local fisheries biologists, published literature, records of the Idaho Department of Fish and Game, and other appropriate records of spawning and incubation, as further described in the current version of the "Water Body Assessment Guidance" published by the Idaho Department of Environmental Quality. Waters designated for salmonid spawning, in areas used for spawning and during the time spawning and incubation occurs, are not to vary from the following characteristics due to human activities: (3-30-07)

i. Dissolved Oxygen. (8-24-94)

(1) Intergravel Dissolved Oxygen. (8-24-94)

(a) One (1) day minimum of not less than five point zero (5.0) mg/l. (8-24-94)

(b) Seven (7) day average mean of not less than six point zero (6.0) mg/l. (8-24-94)

(2) Water-Column Dissolved Oxygen. (8-24-94)

(a) One (1) day minimum of not less than six point zero (6.0) mg/l or ninety percent (90%) of saturation, whichever is greater. (8-24-94)

ii. Water temperatures of thirteen (13) degrees C or less with a maximum daily average no greater than nine (9) degrees C.

g. Bull Trout Temperature Criteria. Water temperatures for the waters identified under Subsection 250.02.g.i. shall not exceed thirteen degrees Celsius (13C) maximum weekly maximum temperature (MWMT) during June, July and August for juvenile bull trout rearing, and nine degrees Celsius (9C) daily average during September and October for bull trout spawning. For the purposes of measuring these criteria, the values shall be generated from a recording device with a minimum of six (6) evenly spaced measurements in a twenty-four (24)

hour period. The MWMT is the mean of daily maximum water temperatures measured over the annual warmest consecutive seven (7) day period occurring during a given year. (3-30-01)

i. The bull trout temperature criteria shall apply to all tributary waters, not including fifth order main stem rivers, located within areas above fourteen hundred (1400) meters elevation south of the Salmon River basin-Clearwater River basin divide, and above six hundred (600) meters elevation north of the Salmon River basin-Clearwater River basin divide, in the fifty-nine (59) Key Watersheds listed in Table 6, Appendix F of Governor Batt's State of Idaho Bull Trout Conservation Plan, 1996, or as designated under Sections 110 through 160 of this rule. (3-23-98)

ii. No thermal discharges will be permitted to the waters described under Subsection 250.02.g.i. unless socially and economically justified as determined by the Department, and then only if the resultant increase in stream temperature is less than five-tenths degrees Celsius (0.5C). (4-5-00)

h. Kootenai River sturgeon temperature criteria. Water temperatures within the Kootenai River from Bonners Ferry to Shorty's Island, shall not exceed a seven (7) day moving average of fourteen degrees celsius (14C) based on daily average water temperatures, during May 1 through July 1. (3-23-98)

03. Seasonal Cold Water. Between the summer solstice and autumn equinox, waters designated for seasonal cold water aquatic life are not to vary from the following characteristics due to human activities. For the period from autumn equinox to summer solstice the cold water criteria will apply: (3-15-02)

a. Dissolved Oxygen Concentrations exceeding six (6) mg/l at all times. In lakes and reservoirs this standard does not apply to: (4-5-00)

i. The bottom twenty percent (20%) of water depth in natural lakes and reservoirs where depths are thirty-five (35) meters or less. (4-5-00)

ii. The bottom seven (7) meters of water depth in natural lakes and reservoirs where depths are greater than thirty-five (35) meters. (4-5-00)

iii. Those waters of the hypolimnion in stratified lakes and reservoirs. (4-5-00)

b. Water temperatures of twenty-six (26) degrees C or less as a daily maximum with a daily average of no greater than twenty-three (23) degrees C. (3-30-01)

c. Temperature in lakes shall have no measurable change from natural background conditions. Reservoirs with mean detention times of greater than fifteen (15) days are considered lakes for this purpose.(3-15-02)

d. Ammonia. Concentration of ammonia are not to exceed the criteria defined at Subsection 250.02.d. (3-15-02)

04. Warm Water. Waters designated for warm water aquatic life are not to vary from the following characteristics due to human activities: (3-30-07)

a. Dissolved oxygen concentrations exceeding five (5) mg/l at all times. In lakes and reservoirs this standard does not apply to: (7-1-93) i. The bottom twenty percent (20%) of the water depth in natural lakes and reservoirs where depths are thirty-five (35) meters or less. (7-1-93)

ii. The bottom seven (7) meters of water depth in natural lakes and reservoirs where depths are greater than thirty-five (35) meters. (7-1-93) iii. Those waters of the hypolimnion in stratified lakes and reservoirs. (7-1-93)

b. Water temperatures of thirty-three (33) degrees C or less with a maximum daily average not greater than twenty-nine (29) degrees C. (8-24-94)

c. Temperature in lakes shall have no measurable change from natural background conditions. Reservoirs with mean detention times of greater than fifteen (15) days are considered lakes for this purpose.(3-15-02)

d. Ammonia. The following criteria are to be met dependent upon the temperature, T (degrees C), and pH of the water body: (3-15-02) i. Acute Criterion (Criterion Maximum Concentration (CMC)). The one (1) hour average concentration of total ammonia nitrogen (in mg N/L) is not to exceed, more than once every three (3) years, the value calculated using the following equation:

$$CMC = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

ii. Chronic Criterion (Criterion Continuous Concentration (CCC)). Concentrations of ammonia are not to exceed the criteria defined at Subsection 250.02.d.ii. (3-15-02)

05. Modified. Water quality criteria for modified aquatic life will be determined on a case-by-case basis reflecting the chemical, physical, and biological levels necessary to attain the existing aquatic life community. These criteria, when determined, will be adopted into these rules. (3-15-02)

251.SURFACE WATER QUALITY CRITERIA FOR RECREATION USE DESIGNATIONS.

01. E. Coli Bacteria. Waters designated for recreation are not to contain E.coli bacteria, used as indicators of human pathogens, in concentrations exceeding: (4-11-06)

a. Geometric Mean Criterion. Waters designated for primary or secondary contact recreation are not to contain *E. coli* bacteria in concentrations exceeding a geometric mean of one hundred twenty-six (126) *E. coli* organisms per one hundred (100) ml based on a minimum of five (5) samples taken every three (3) to seven (7) days over a thirty (30) day period. (4-11-06)

b. Use of Single Sample Values. A water sample exceeding the *E. coli* single sample maximums below indicates likely exceedance of the geometric mean criterion, but is not alone a violation of water quality standards. If a single sample exceeds the maximums set forth in Subsections 251.01.b.i., 251.01.b.ii., and 251.01.b.iii., then additional samples must be taken as specified in Subsection 251.01.c.: (4-11-06)

i. For waters designated as secondary contact recreation, a single sample maximum of five hundred seventy-six (576) *E. coli* organisms per one hundred (100) ml; or (4-11-06)

ii. For waters designated as primary contact recreation, a single sample maximum of four hundred six (406) *E. coli* organisms per one hundred (100) ml; or (4-11-06)

iii. For areas within waters designated for primary contact recreation that are additionally specified as public swimming beaches, a single sample maximum of two hundred thirty-five (235) *E. coli* organisms per one hundred (100) ml. Single sample counts above this value should be used in considering beach closures. (4-11-06)

c. Additional Sampling. When a single sample maximum, as set forth in Subsections 251.01.b.i., 251.01.b.ii., and 251.01.b.iii., is exceeded, additional samples should be taken to assess compliance with the geometric mean *E. coli* criteria in Subsection 251.01.a. Sufficient additional samples should be taken by the Department to calculate a geometric mean in accordance with Subsection 251.01.a. This provision does not require additional ambient monitoring responsibilities for dischargers. (4-11-06)

252.SURFACE WATER QUALITY CRITERIA FOR WATER SUPPLY USE DESIGNATION.

02. Agricultural. Water quality criteria for agricultural water supplies will generally be satisfied by the water quality criteria set forth in Section 200. Should specificity be desirable or necessary to protect a specific use, “Water Quality Criteria 1972" (Blue Book), Section V, Agricultural Uses of Water, EPA, March, 1973 will be used for determining criteria. This document is available for review at the Idaho Department of Environmental Quality, or can be obtained from EPA or the U.S. Government Printing Office.

Appendix H: IDEQ Draft 401 Certification

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550
www.deq.idaho.gov

C.L. "Butch" Otter, Governor
John H. Tippets, Director

February 19, 2016

Mr. Michael J. Lidgard
NPDES Permits Unit Manager
EPA Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

Subject: DRAFT 401 Water Quality Certification for the City of Parma Wastewater Treatment Facility (WWTF), ID-0021776

Dear Mr. Lidgard:

The Boise Regional Office of the Department of Environmental Quality (DEQ) has reviewed the above-referenced draft permit for the Parma WWTF. Section 401 of the Clean Water Act requires that states issue certifications for activities which are authorized by a federal permit and which may result in the discharge to surface waters. In Idaho, DEQ is responsible for reviewing these activities and evaluating whether the activity will comply with Idaho's Water Quality Standards, including any applicable water quality management plans (e.g., total maximum daily loads). A federal discharge permit cannot be issued until DEQ has provided certification or waived certification either expressively or by taking no action.

This letter is to inform you that DEQ is issuing the attached draft 401 certification subject to the terms and conditions contained therein.

Please contact me directly at (208) 373-0420 to discuss any questions or concerns regarding the content of this draft certification.

Sincerely,

Aaron Scheff
Regional Administrator
Boise Regional Office

Attachment

c: Susan Poulsom

ec: Nicole Deinarowicz, DEQ State Office
TRIM 2015AKF93

Idaho Department of Environmental Quality

Draft §401 Water Quality Certification

January 21, 2016

NPDES Permit Number(s): ID-0021776, City of Parma Wastewater Treatment Facility (WWTF)

Receiving Water Body: Sand Hollow Creek

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended; 33 U.S.C. Section 1341(a)(1); and Idaho Code §§ 39-101 et seq. and 39-3601 et seq., the Idaho Department of Environmental Quality (DEQ) has authority to review National Pollutant Discharge Elimination System (NPDES) permits and issue water quality certification decisions.

Based upon its review of the above-referenced permit and associated fact sheet, DEQ certifies that if the permittee complies with the terms and conditions imposed by the permit along with the conditions set forth in this water quality certification, then there is reasonable assurance the discharge will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02), and other appropriate water quality requirements of state law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations, or permits.

Antidegradation Review

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).
- Tier 3 Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

Pollutants of Concern

The City of Parma WWTF discharges the following pollutants of concern: five day biochemical oxygen demand (BOD_5), total suspended solids (TSS), total phosphorus (TP), *E. coli*, pH, ammonia, nitrate + nitrite, total Kjeldahl nitrogen (TKN), total dissolved solids (TDS), and total residual chlorine (TRC). Effluent limits have been developed for BOD_5, TSS, TP, *E. coli*, pH, and TRC. No effluent limits are proposed for ammonia, nitrate + nitrite, TKN, or TDS; however monitoring requirements are included in the permit so that reasonable potential to exceed WQS can be determined for future permits.

Receiving Water Body Level of Protection

The City of Parma WWTF discharges to the Sand Hollow Creek within the Lower Boise Subbasin assessment unit (AU) ID17050114SW017_03 (Sand Hollow Creek – I-84 to Sharp Road). This AU has the following designated beneficial use: secondary contact recreation. Sand Hollow Creek is undesignated for aquatic life, however, DEQ presumes undesignated waters in the state, that are not man-made waters, will support cold water aquatic life beneficial uses; therefore, undesignated waters are protected for these uses (IDAPA 58.01.02.101.01.a). In addition to these uses, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100).

The cold water aquatic life use in Sand Hollow Creek AU) ID17050114SW017_03 is not fully supported due to excess sedimentation/siltation. The secondary contact recreation beneficial use is not fully supported due to excess *E. coli*, bacteria. As such, DEQ will provide Tier 1 protection only for the aquatic life and recreation beneficial uses (IDAPA 58.01.02.051.02; 58.01.02.051.01).

Protection and Maintenance of Existing Uses (Tier 1 Protection)

As noted above, a Tier 1 review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. The numeric and narrative criteria in the WQS are set at levels that ensure protection of designated beneficial uses. The effluent limitations and associated requirements contained in the City of Parma WWTF permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS.

Water bodies not supporting existing or designated beneficial uses must be identified as water quality limited, and a total maximum daily load (TMDL) must be prepared for those pollutants causing impairment. A central purpose of TMDLs is to establish wasteload allocations for point source discharges, which are set at levels designed to help restore the water body to a condition that supports existing and designated beneficial uses. Discharge permits must contain limitations that are consistent with wasteload allocations in the approved TMDL.

Prior to the development of the TMDL, the WQS require the application of the antidegradation policy and implementation provisions to maintain and protect uses (IDAPA 58.01.02.055.04).

Sand Hollow Creek (AU 17050114SW017_06), downstream approximately 2.5 miles from the City of Parma WWTF, is listed for cause unknown (nutrients suspected) and flows into the Hells Canyon Segment of the Snake River, which is also impaired due to excess nutrients. The *Snake River Hells Canyon* (SR-HC) *TMDL* (DEQ 2003) established load allocations for all of the tributaries, including Sand Hollow Creek, which are based upon a TP concentration of 0.07 mg/L at the mouths of these tributaries.

The draft permit includes a TP effluent limit based on the design flow of the facility; this limit is consistent with the load allocation assigned to all tributaries to the Snake River in the SR-HC TMDL. The effluent limitations in the permit will result in a decrease of TP in Sand Hollow Creek and also the Snake River Hells Canyon.

Sand Hollow Creek (AU 17050114SW017_03), is impaired for sediment and *E. coli*. The City of Parma WWTF discharge meets performance based limits for sediment (TSS) in its current permit and has similar requirements in the draft permit. The *Lower Boise River TMDL 2015 Sediment and Bacteria Addendum* was completed to address the sediment and bacteria impairments in Sand Hollow Creek. The City of Parma was identified as a point source in the TMDL. However, since they presently meet their wasteload allocations for TSS and *E. coli*, no further reductions were necessary.

The *Lower Boise River TMDL 2015 Sediment and Bacteria Addendum E. coli* wasteload allocations are based on a bacteria concentration of 126 cfu/100 mL, collected as a 5-sample geometric mean over 30 days; which is consistent with current permit limits. Sediment wasteload allocations are based on 20 mg/L, less 2.5 mg/L for natural background (TMDL section 5.4.6), and are expressed as 4-month averages. This TMDL is concentration based, so the WLAs are based on the design flow:

E. coli WLA (in 10^9 cfu/day) = $Q \times 4.76$

Sediment WLA (in kg/day) = $Q \times 66.2$

Where Q is the design flow of the facility in million gallons per day (mgd).

The coefficients are simply a collection of conversion constants:

E. coli: $126\ cfu/100\ mL \times \frac{3.785\ L/gal \times 10^6\ gal/million\ gal}{0.1L/100mL \times 10^9} = \mathbf{4.76} \times 10^9 cfu/\ day/mgd$

Sediment: $\frac{(20-2.5)mg}{L} \times \frac{3.785\ L/gal \times 10^6\ gal/million\ gal}{10^6\ mg/kg} = \mathbf{66.2}\ kg/day/mgd$

If the design flow were to increase in the future, then the WLAs would correspondingly increase. The present design flows and WLA are shown in the *Lower Boise River TMDL 2015 Sediment and Bacteria Addendum* Table 26. To ensure consistency with this TMDL, DEQ expects this and future permits to contain a 4-month average effluent limit of 17.5 mg/L TSS with an associated load based on the permitted design flow of the facility and *E. coli* average monthly effluent limits of 126 cfu/100ml and maximum daily limits of 576 cfu/100 mL.

The *Lower Boise River TMDL 2015 Sediment and Bacteria Addendum* and EPA-approved *SR-HC* TMDL establishes wasteload allocations for sediment, bacteria, and total phosphorus. These wasteload allocations are designed to ensure the Sand Hollow Creek will achieve the water quality necessary to support its existing and designated aquatic life and recreational beneficial uses and comply with the applicable numeric and narrative criteria. The effluent limitations and associated requirements contained in the City of Parma WWTF permit are set at levels that comply with these wasteload allocations.

In sum, the effluent limitations and associated requirements contained in the City of Parma WWTF permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS and the wasteload allocations established in the *Lower Boise River Sediment and Bacteria Addendum* and *Snake River Hells Canyon TMDL*. Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the Sand Hollow Creek in compliance with the Tier 1 provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

Conditions Necessary to Ensure Compliance with Water Quality Standards or Other Appropriate Water Quality Requirements of State Law

Compliance Schedule

Pursuant to IDAPA 58.01.02.400.03, DEQ may authorize compliance schedules for water quality–based effluent limits issued in a permit for the first time. City of Parma WWTF cannot immediately achieve compliance with the effluent limits for TRC and TP; therefore, DEQ authorizes a compliance schedule and interim requirements as set forth below. This compliance schedule provides the permittee a reasonable amount of time to achieve the final effluent limits as specified in the permit. At the same time, the schedule ensures that compliance with the final effluent limits is accomplished as soon as possible.

While the schedules of compliance are in effect, the City of Parma WWTF must meet the following interim requirements:

1) The City of Parma WWTF must comply with the interim effluent limitations (Table 1) and monitoring requirements in Part I.B. of the Permit.
2) Until compliance with the final effluent limitations are achieved, the City of Parma WWTF must complete the tasks listed below in Table 1 and 2, as required under the schedules of compliance.

3) In addition, the City of Parma must submit an annual progress report outlining progress made towards reaching the final compliance dates for the effluent limitations. The annual progress report based on data gathered through December 31st must be submitted to the EPA and DEQ annually by February 15th of the subsequent year. The first report through December 31, 2016 is due on February 15, 2017 and annually thereafter, until compliance with effluent limitations is achieved. See also the Permit Part III.K., "Compliance Schedules." At a minimum, the annual progress report must include:

   i) An assessment of the previous year's TP and TRC effluent data and comparison to the final effluent limitations in the permit.

   ii) A description of progress made towards meeting the final effluent limitations, including the applicable deliverables required under in Table 1 and 2. Include any exceedances of interim permit limits or anticipated challenges for compliance within the next year. This may include a technological explanation and/or a request to modify the permit.

   iii) A description of actions and milestones targeted for the upcoming year towards meeting the final effluent limitations.

4) The permittee must comply with the Interim Effluent Limits, Compliance Tasks and Compliance Dates in Table 1 and Table 2:

Table 1. Tasks Required Under the Schedule of Compliance for Total Residual Chlorine (TRC).

Task No.	Completion Date	Task Activity
1	Effective Date of the Permit (EDP) + 1 year	Engineering Facility Plan The permittee must complete a study that identifies both short and long term steps necessary to reduce TRC and meet the final effluent limits. Deliverable: Provide a preliminary engineering study to DEQ for review and necessary approval and submit a copy of the approved study to EPA within 1 year of the EDP.
2	EDP + 2 Years	Financing and Engineering Design The permittee must complete final engineering design and secure funding to complete facility improvements. Deliverables: The permittee will secure funding to complete facility improvements necessary to achieve final TRC limits within 2 years of the EDP. The permittee must receive DEQ approval of the final design and provide written notification of this to the EPA within 2 years of the EDP.
3	EDP + 3 Years	Construction, Commissioning and Achieve Compliance with TRC limits Deliverables: The permittee must submit construction completion report to EPA and DEQ within 3 years of the EDP. The permittee must achieve compliance with the final effluent limitations and provide written verification to the EPA and DEQ that the final water quality-based eluent limit can be reliably met within 3 years of the EDP.

Table 2. Tasks Required Under the Schedule of Compliance for Total Phosphorus

Task No.	Completion Date	Task Activity
1	EDP + 2 years	Engineering Facility Plan The Permittee must develop a facility plan that evaluates the alternatives that would allow the facility to meet the final water quality-based effluent limitations for phosphorus, including but not limited to treatment plant upgrades, seasonal re-use, and pollutant trading projects. Deliverable: The permittee will provide EPA with written notice that the facility Planning Study has been submitted to DEQ.
2	EDP + 2 Years	Select Alternative The permittee must select an alternative to come into compliance with the total phosphorus limit. Deliverable: The permittee will provide DEQ and EPA with written notice of the selected alternative(s).
3	EDP + 5 Years	Evaluate and Obtain Financing The Permittee must acquire funds to complete facility upgrades and/or the alternative mitigation plan necessary to comply with the final effluent limitations for ammonia and TP by the end of this compliance schedule. Deliverables: Permittee must provide written notice to DEQ and EPA that the funding to finance any necessary facility upgrades or alternative mitigation plan is in place within 4 years of the EDP.
4	EDP + 6 Years	Preliminary Design City must complete the preliminary design of any planned facility upgrades and/or a preliminary plan and schedule for an alternative phosphorus mitigation approach, which will address the City's total phosphorus effluent limit. Deliverable: The permittee will provide EPA with written notice that the preliminary design and/or mitigation plan has been submitted and approved by DEQ.
5	EDP + 6 Years	Complete Final Design City must complete and receive DEQ approval of the final design of any facility upgrades necessary to address the final effluent total phosphorus limits. Deliverable: The permittee will submit the final design to DEQ for approval and provide EPA with written notice that the final design documents are completed.
6	EDP + 8 Years	Complete Construction Deliverable: The permittee will provide DEQ and EPA with written notice that the construction is completed.
7	EDP + 9 Years and 11 months	Process Optimization and Achieve Final Effluent Limitation Commission new facility equipment/process over one season to optimize the process and ensure consistent achievement of final effluent limits. Deliverable: The permittee must achieve compliance with the final effluent limitations and provide DEQ and EPA with written notice of compliance with final effluent limitations.

Mixing Zones

Pursuant to IDAPA 58.01.02.060, DEQ authorizes a mixing zone that utilizes 25% of the critical flow volumes of Sand Hollow Creek for chlorine (TRC) and ammonia.

Other Conditions

This certification is conditioned upon the requirement that any material modification of the permit or the permitted activities—including without limitation, any modifications of the permit to reflect new or modified TMDLs, wasteload allocations, site-specific criteria, variances, or other new information—shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401.

Right to Appeal Final Certification

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5) and the "Rules of Administrative Procedure before the Board of Environmental Quality" (IDAPA 58.01.23), within 35 days of the date of the final certification.

Questions or comments regarding the actions taken in this certification should be directed to Kati Carberry, DEQ Boise Regional Office at 208.373.0434 or Kati.Carberry@deq.idaho.gov.

DRAFT

Aaron Scheff
Regional Administrator
Boise Regional Office